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MONTANA'S BIOENERGY PROJECT PERMITTING GUIDEBOOK

MONTANA DEPARTMENT OF
NATURAL RESOURCES AND CONSERVATION

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NOTICE

This guidebook was prepared for the Montana Department of Natural Resources and Conservation in support of the Pacific Northwest and Alaska Bioenergy Program administered by the Bonneville Power Administration for the U.S. Department of Energy. Any opinions, findings, and conclusions presented in this guidebook are those of the preparers and do not necessarily represent the views of the Bonneville Power Administration or the Montana Department of Natural Resources and Conservation. No warranty is made that the information in this guidebook complies with all federal or state law.

ACKNOWLEDGMENTS

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Sections of this guidebook are drawn from the publication, the Montana Index of Environmental Permits, compiled by Steven J. Perlmutter and published by the Montana Environmental Quality Council (EQC). Other information was acquired from individuals, businesses, organizations, and government agencies. A special thanks to EQC and to all the other individuals who provided information on the permits, laws, rules, and biomass energy projects discussed in this guide.

INTRODUCTION

Many individuals, businesses, and municipalities are interested in developing biomass energy projects. In planning and developing a project there are many federal, state, and local laws and regulations that affect such projects. There are applications to file, time deadlines to meet, requirements to comply with, and project information to file with the appropriate authorities. Montana's Guide to Permits for Biomass Energy Projects was written to provide project developers, government officials, interested professionals, and citizens with an overview of the permitting process, a comprehensive list of permits and licenses required for biomass projects, explanations of the technologies involved in biomass energy projects, lists of current biomass energy projects, and lists of resource people who might be helpful to projects. Because projects frequently require permits from local, state, and federal agencies, the guide is designed to cover all three areas of regulation.

This guide is designed to help people understand the permitting process. It is not a legal document and should not be relied on exclusively to determine legal responsibilities. It is not a substitute for obtaining detailed information regarding licenses, permits, standards, operating requirements, and enforcement from government agencies. Some permits and licenses that are not included in this guide may be necessary to a particular project. If a proposed project is at all related to specific areas of regulation listed, it is recommended that the appropriate agencies be contacted for further information.

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SECTION 1: WHERE TO START

HOW TO USE THE GUIDE

Montana's Bioenergy Project Permitting Guidebook is divided into five major sections. Section 1, "Where to Start", explains how to use the guide, discusses the term biomass energy, and outlines the process of planning a biomass energy project. Section 2, "Biomass Energy Technologies", discusses five current and five developing technologies in Montana. The text that accompanies each technology gives a brief explanation of that technology and an overview of the permits, licenses, or other areas of compliance related to that technology. Also included are flow diagrams for each technology which detail resource inputs, steps in each process, end products, and environmental emissions for each technology. In addition, a separate part of this section discusses environmental considerations and particularly expands on air quality, water quality, and waste management requirements. Section 3, "Permits By Category", lists permits by topical area. Section 4, "Special Areas", discusses those areas not mentioned elsewhere. Section 5, "Biomass Resources", provides information and contacts regarding biomass resource availability. Appendices include a list of Montana biomass energy projects; lists of federal agencies, state agencies, and organizations. All agencies and organizations mentioned in the text of the guidebook are listed with their address and phone number in one of the appendices. All books mentioned in the text of the guidebook are cited in the bibliography. Finally, a glossary and a subject index are included.

The permit summary on page 44 is provided as a quick overview and locator for permits. Other tables and figures are placed throughout the guide as helpful research and finding aids.

Permit descriptions are based on interviews with staff members in each agency and information in the 1985 edition of the laws of Montana, the Montana Code Annotated (MCA), and in the rules currently in force in the Administrative Rules of Montana (A.R.M.) in March 1986. For further information, the MCA is available at most large public libraries and college and university libraries while the A.R.M. is available at most college and university libraries. Copies of specific rules are usually available from the agency that administers them. The Montana State Library in Helena is a good source for all state documents and reports cited in the bibliography.

Every effort has been made to present accurate, comprehensive information in this guide. Every project is unique. It is recommended that the guide be used as a starting place in the permitting process. It is not a substitute for working closely with authorized agencies and other professionals to assure a project that is economically sound and in compliance with all federal and state laws and rules.

WHAT IS BIOMASS ENERGY?

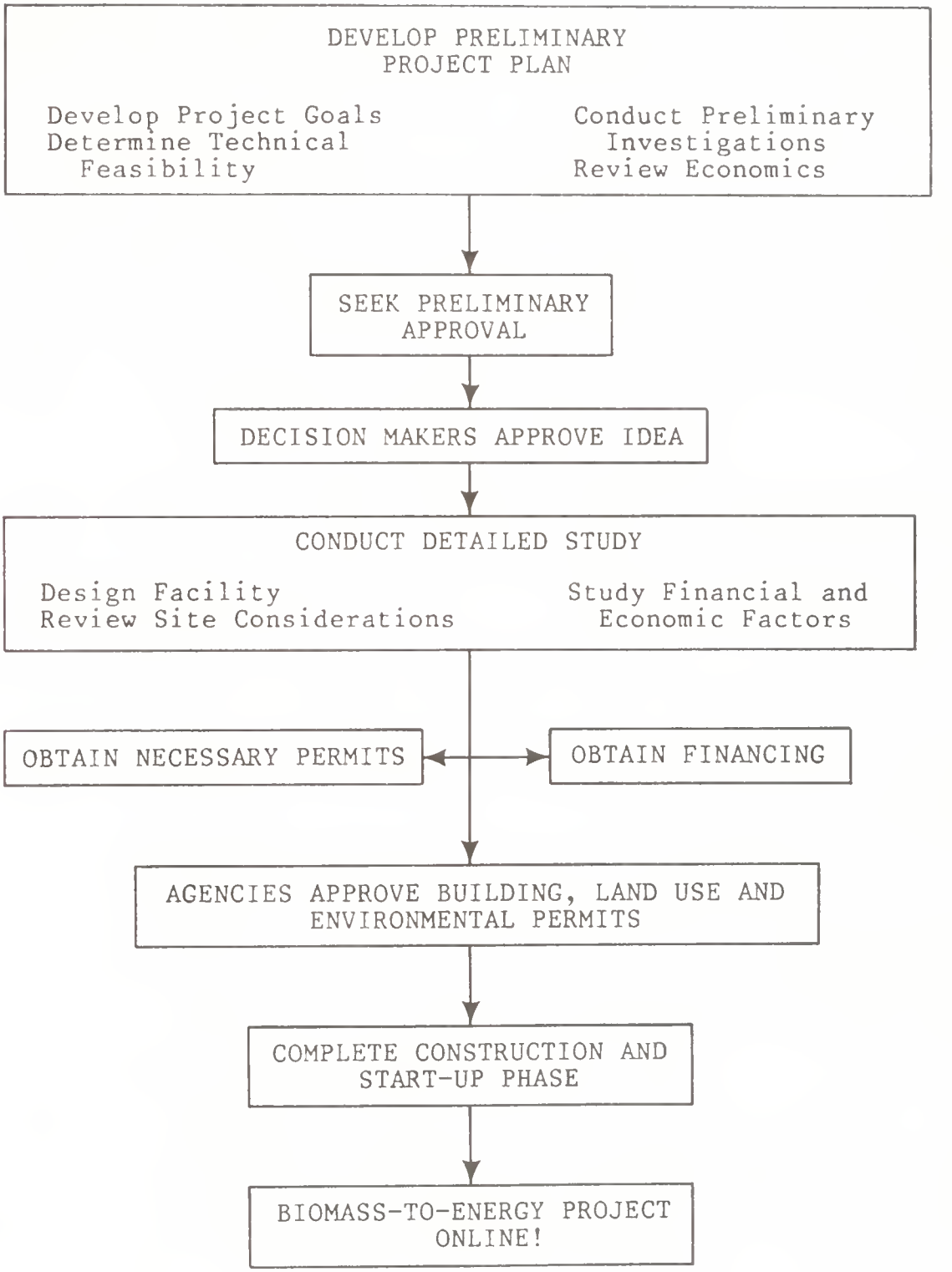
Biomass is any organic matter which is available on a renewable basis, including forest residues, agricultural crops and wastes, wood and wood wastes, animal wastes, livestock operation residue, food processing wastes, and municipal wastes. All biomass contains carbon. Plants, trees, garbage, manure, and vegetable oils are all forms of biomass that can be used to produce energy.

The energy that is released from biomass when it is processed, burned, or converted into fuels is called biomass energy. The result is the use of biomass energy to generate electricity, mechanical power, space heat, or industrial process heat.

Current technologies such as alcohol fermentation, anaerobic digestion, densification, direct combustion, and cogeneration are being used in biomass projects in Montana. A biomass energy facility may integrate several biomass technologies, for example, a waste wood fired boiler could provide process steam for an alcohol plant. Developing technologies such as oilseed extraction, pyrolysis, liquefaction, landfill gas and gasification are also being studied for their potential uses in Montana.

Biomass energy projects in Montana include: biogas production by municipal sewage plants; fuel alcohol production from grains and agricultural wastes; wood waste utilization for process heat or for production of densified fuels; and energy produced from garbage. Many of these projects turn waste into a viable energy resource. In addition, using Montana biomass has the advantage of obtaining energy from local renewable resources. In these days of shrinking budgets, emphasis on waste conversion, energy conservation, and lowered transportation costs in biomass energy projects can provide cost-effective alternatives to previous methods.

FIGURE 1: HOW TO PLAN A BIOMASS ENERGY PROJECT



HOW TO PLAN A BIOMASS ENERGY PROJECT

Successful development of a biomass energy project is contingent on a number of factors, which include: thorough research and planning, economics, financing, resource availability, collection and conversion technology, technologies applicable to the end use, appropriate design for a specific location, and efficient operations practices.

The following guidelines are helpful planning tools:

1. DEVELOP A PRELIMINARY PROJECT PLAN.

Develop an organized preliminary project plan which should include information on project goals, prospective sites, resource availability, plant size and design, technologies to be used and market analyses for end products. In addition, develop a preliminary financial and economic estimate which includes estimates of the cost of the project, projected revenues, and economic factors which influence those areas. Research possible environmental considerations.

2. SEEK PRELIMINARY APPROVAL FOR THE PROJECT.

Submit the preliminary project plan to the local authorizing agency such as a Planning Board or Board of Commissioners for preliminary review and approval. The local authority will review the proposal to see if it complies with regulations. In addition, it may be necessary to consult the local health office to see if regulations on air quality, sewage disposal, or garbage apply to the project.

3. CONDUCT A DETAILED STUDY OF THE PROPOSED PROJECT.

A. Facility Design.

Review the project goals, technologies to be used and plant size and design and determine the technical feasibility of the project. An engineer can complete preliminary plant and system designs, develop technical options and alternate plans, and identify potential environmental emissions and impacts.

B. Economics.

Review financial and economic factors such as resource costs and locations; potential markets and prices for end products; tax incentives; effects of fuel supply costs and fluctuations; electric buy-back rates, if applicable; and potential financing options. An accountant or business consultant will help prepare a business plan or loan prospectus.

4. PREPARE A DETAILED PROJECT PLAN.

Develop a written plan which includes detailed information on cost, design, and site considerations. This project plan will provide information on the project to local, state, and federal agencies involved in the permitting process as well as potential investors and other interested parties.

5. IDENTIFY NECESSARY PERMITS.

Identify all permits necessary to the project by using this guide as a starting place to review laws and regulations related to a project. Because each project is unique, it is usually necessary to contact federal and state agencies to obtain more detailed information on permits and other areas of compliance. Develop a project timetable such as that in table 1. Identify other areas of compliance which may not require a permit. Identify areas of business regulation such as company registration, licenses, taxes, and employment information which require compliance.

6. ARRANGE FINANCING

Review the economic section of the detailed study. Contact financial institutions with the business plan and loan prospectus. In addition, information on the renewable energy loan program, sponsored by the Department of Natural Resources and Conservation, is available from their Conservation and Renewable Energy Bureau's Grant and Loan Section. Assistance may also be available from the Montana Science and Technology Alliance which has some loan money available for Monana business ventures and is in the process of establishing a Montana venture capital network.

7. OBTAIN NECESSARY PERMITS.

Contact the appropriate city or county agency for land-use permits. Permit titles, forms, and procedures differ, but local governments must authorize project plans before construction can begin. Site approval for an energy project can be a long complicated process, depending on the size of the project. It can include site surveys, public hearings, and litigation. Land-use permits are required before environmental permits can be issued.

Construction plans and building operations must be approved by either the state or local building office depending on areas of jurisdiction. The authorizing agency may have to inspect buildings and equipment before operation begins.

Environmental permits may be required for air pollution, water pollution or waste disposal. Some air and water permits may require site monitoring for informational data before a permit is issued. In addition, monitoring of the site at intervals may be required after the project is initiated.

Investigate other necessary permits by reviewing the Permit Summary on page 44; Section 2, "Biomass Energy Technologies"; Section 3, "Permits by Category"; and Section 4, "Special Areas".

Submit applications on time and follow the permit timetable developed for the specific project. The overall time required to obtain all permits for a project may vary from a few months for a small project to well over a year for a larger one. Factors that influence the time involved include delays in the land approval process and complying with environmental monitoring requirements.

TABLE 1: PERMIT CALENDAR

Minimum Time You Can Expect Before Approval of a Project:

Months prior to construction:	12	11	10	9	8	7	6	5	4	3	2	1
AIR QUALITY												
Air Pollution Permit (An environmental impact statement can add 6 months)												
ALCOHOL PRODUCTION												
Alcohol Production Permit												
CONSTRUCTION, LAND USE												
Building, Mechanical, Electrical, Plumbing, Zoning (Time can vary depending on size and type of project, site considerations, etc.)												
MAJOR FACILITY SITING												
Certificates of Public Need and Environmental Compatibility (18 months)	<<<<<<											
WATER QUALITY												
Montana Ground Water Pollution Control System (MGWPCS) Permit												
Montana Pollutant Discharge Elimination System (MPDES) Permit												
National Pollutant Discharge Elimination System (NPDES) Permit												

SECTION 2: BIOMASS ENERGY TECHNOLOGIES

BIOMASS ENERGY TECHNOLOGIES

Biomass energy technologies are in different phases of development throughout the world. Economic viability and technical development must both be considered when evaluating a biomass technology for commercial use.

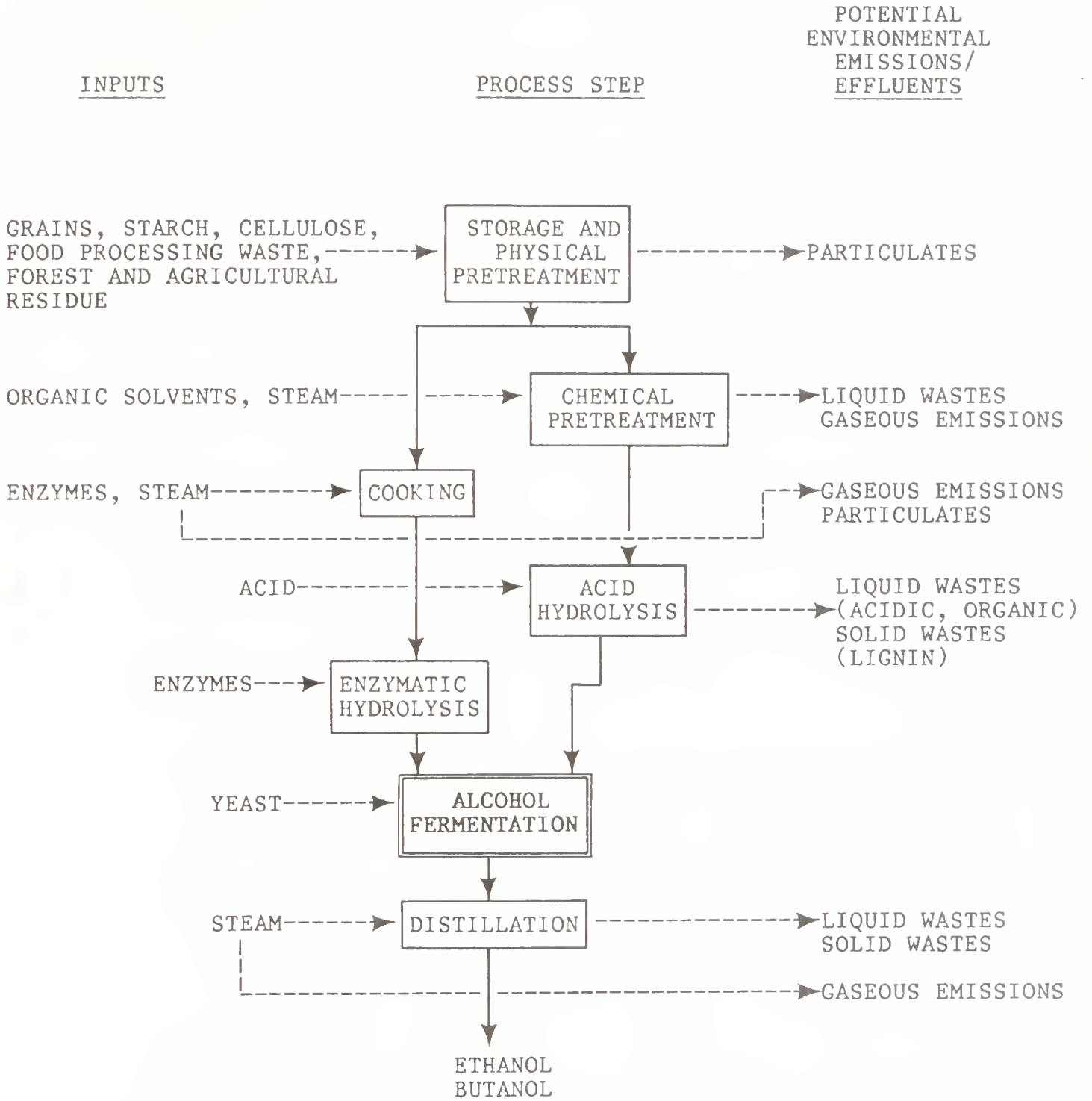
Tables 2 and 3 describe technologies that are either currently in use in Montana or are in the developing stages. These tables detail the process, major biomass resource input and end product for each technology. Figures 2 through 11 are flow charts for each of these ten technologies and are generic in nature to cover many possible configurations of a biomass energy facility. Each flow chart lists raw materials, process steps, and potential environmental emissions. The text which accompanies each flow chart gives an overview of the permits, licenses, or other areas of compliance or regulations which apply to that technology.

Finally, the technologies are followed by an environmental considerations section. Biomass energy technologies have the potential to produce air and water pollutants. In addition, the processes involved in these technologies often produce solid and liquid wastes. Table 4, "Biomass Energy Technologies and Potential Environmental Impacts," shows the potential environmental impacts for each biomass facility. In addition, air quality, water quality, and waste management are generally presented with a broad overview of the laws and rules. More detailed information on each of the environmental permits can be found in Section 3, "Permits by Category". Addresses for all agencies listed in this section can be found in Appendix B, "State Agencies", on pages 96-99 and in Appendix C, "Federal Agencies" on page 100.

TABLE 2: CURRENT TECHNOLOGIES

TECHNOLOGY	MAJOR BIOMASS RESOURCE INPUT	ENERGY PRODUCTS
ALCOHOL FERMENTATION	GRAINS, STARCH, CELLULOSE, FOOD PROCESSING WASTE, FOREST AND AGRICULTURAL RESIDUE	ETHANOL, BUTANOL
ANAEROBIC DIGESTION	MANURE (POULTRY, DAIRY COWS, PIGS), CELLULOSE, FOOD PROCESSING WASTE, WASTEWATER (SEWAGE)	BIOGAS, METHANE
COGENERATION	WOOD, DENSIFIED BIOMASS, AGRICULTURAL RESIDUE, MUNICIPAL SOLID WASTE	HEAT, STEAM, ELECTRICITY, MECHANICAL POWER
DENSIFICATION	FOREST AND AGRICULTURAL RESIDUE, FOREST INDUSTRY RESIDUE, MUNICIPAL SOLID WASTE	PELLETS, BRIQUETS, DENSIFIED LOGS,CUBES
DIRECT COMBUSTION (BOILERS/FURNACES)	WOOD, STRAW, DENSIFIED BIOMASS, MUNICIPAL SOLID WASTE, AGRICULTURAL WASTE, SAWMILL WASTE	HEAT, STEAM, ELECTRICITY, (COGENERATION)

CURRENT TECHNOLOGIES
FIGURE 2: ALCOHOL FERMENTATION



ALCOHOL FERMENTATION

Fuel alcohol is produced by converting starch to sugar, fermenting the sugar to alcohol, and then separating the alcohol-water mixture by distillation. A wide variety of feedstocks containing sugar, starch, or cellulose can be converted to alcohol. Feedstocks currently used in Montana are barley and wheat. Agricultural and forest residue contain cellulose, which requires special pretreatment and processing to convert the cellulose to sugar. The conversion of cellulose feedstocks to ethanol should be considered a developing technology.

For a list of alcohol plants currently operating in Montana, see Appendix A, "Biomass Energy Projects," page 91.

ENVIRONMENTAL PERMITS

Alcohol plants have waste streams with high biological oxygen demand (BOD), a high chemical oxygen demand (COD), a high solids content, and varying pH. If no use is found for the stillage, it can create a very large disposal problem. Acid hydrolysis creates waste streams that require sophisticated neutralization processes. Water pollution permits will be required to discharge any of these waste streams. (See Water Quality, pages 42-43 and 64-67.)

Air quality permits are required for discharge of exhaust gases from the boiler and the distillers dried grains dryer depending on the size of the burner and the type of fuel. Special consideration may have to be given to odor control. (See Air Quality, pages 33-39 and 49-52.)

Solid and hazardous waste disposal permits are not required as long as wastes are disposed of at licensed facilities. There are detailed reporting requirements for hazardous waste disposal. (See Waste Management, pages 40-42 and 62-64.)

CONSTRUCTION AND LAND-USE PERMITS

Local permits are required for different phases of planning and construction. Additional consideration should be given to fire safety. Alcohol is classified as class 1B flammable liquid and presents a fire and explosion hazard. Grain handling and milling present dust explosion hazards. Explosion-proof equipment should be used in areas where alcohol is handled and grain dust is present.

Boilers and boiler operators must be licensed by the Department of Labor and Industry (DOLI), Workers' Compensation Division, Safety Bureau. (See Occupational Safety and Health, pages 60-62 and 78-79.)

SPECIAL PERMITS

Alcohol producers must properly qualify the alcohol plant and obtain a permit from the U.S. Bureau of Alcohol, Tobacco, and Firearms (BATF). Bonding requirements vary depending on the size of the plant. BATF has detailed reporting requirements. Application forms and an information packet are available from

the San Francisco office of BATF.

A feed marketing permit from the state Department of Agriculture (DOA), Plant Industry Division is required for distillers dried grains (DDGS) or other byproducts which are distributed as commercial feed in Montana. The commercial feed must be registered and comply with labeling format and other requirements as stated in the DOA rules.

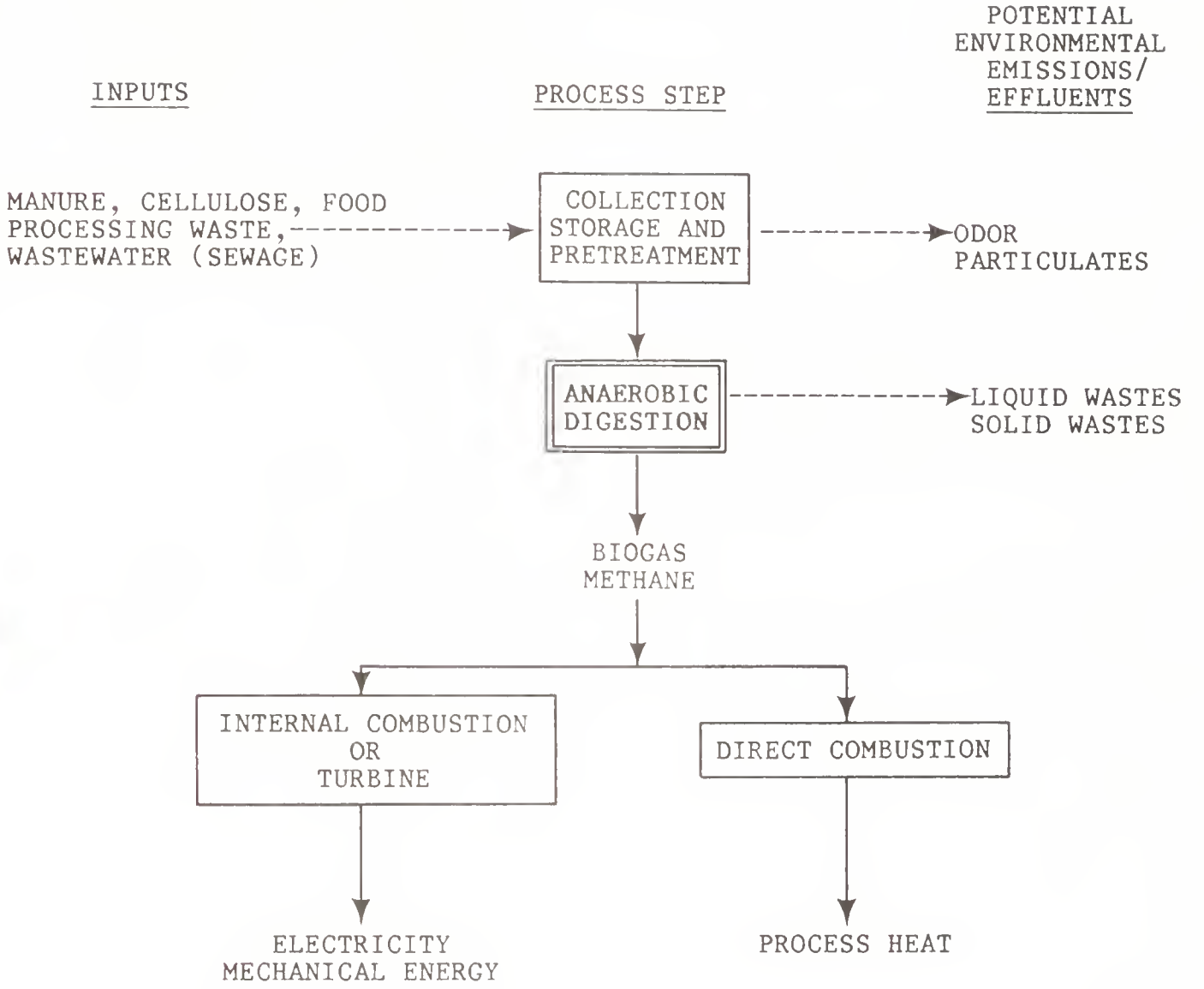
Additionally, anyone marketing or housing grain may have to obtain an agricultural commodity dealers license or a warehouseman's license. (See Agriculture, pages 47-49.)

Prior to doing business in Montana, every alcohol distributor must obtain a license from the state Department of Revenue (DOR), Motor Fuels Division. The DOR requires alcohol distributors to file detailed monthly statements on all sales activities. This information qualifies a distributor for a tax incentive on each gallon of alcohol sold, provided the alcohol was produced in Montana from Montana agricultural products, including wood or wood products, and also provided that the alcohol was blended with gasoline for sale as gasohol or was exported from Montana and has been blended with gasoline for sale as gasohol.

Gasoline distributors who blend alcohol with gasoline and distribute it in Montana are required to pay a gasoline license tax on each gallon of gasohol sold in Montana. If the gasohol is exported, no tax is required.

Real and personal property used in the production of gasohol or ethanol production facilities in Montana may be eligible for property tax reductions for the first three years of use. For more information on this, contact the Agricultural Bureau Chief of the DOR, Property Assessment Division.

CURRENT TECHNOLGIES
FIGURE 3: ANAEROBIC DIGESTION



ANAEROBIC DIGESTION

Anaerobic digestion converts organic matter to a mixture of 60% methane (the major conponent of natural gas) and 40% carbon dioxide. The digestion process is now primarily used to degrade animal manures and municipal sewage, but can also be used to degrade most cellulose materials. The methane produced can be used for heating, process heat, mechanical energy, or electrical generation.

For a list of municipalities using anaerobic digestion to produce biogas and the location of an operating farm-scale methane digester, see Appendix A, "Biomass Energy Projects," page 92.

ENVIRONMENTAL PERMITS

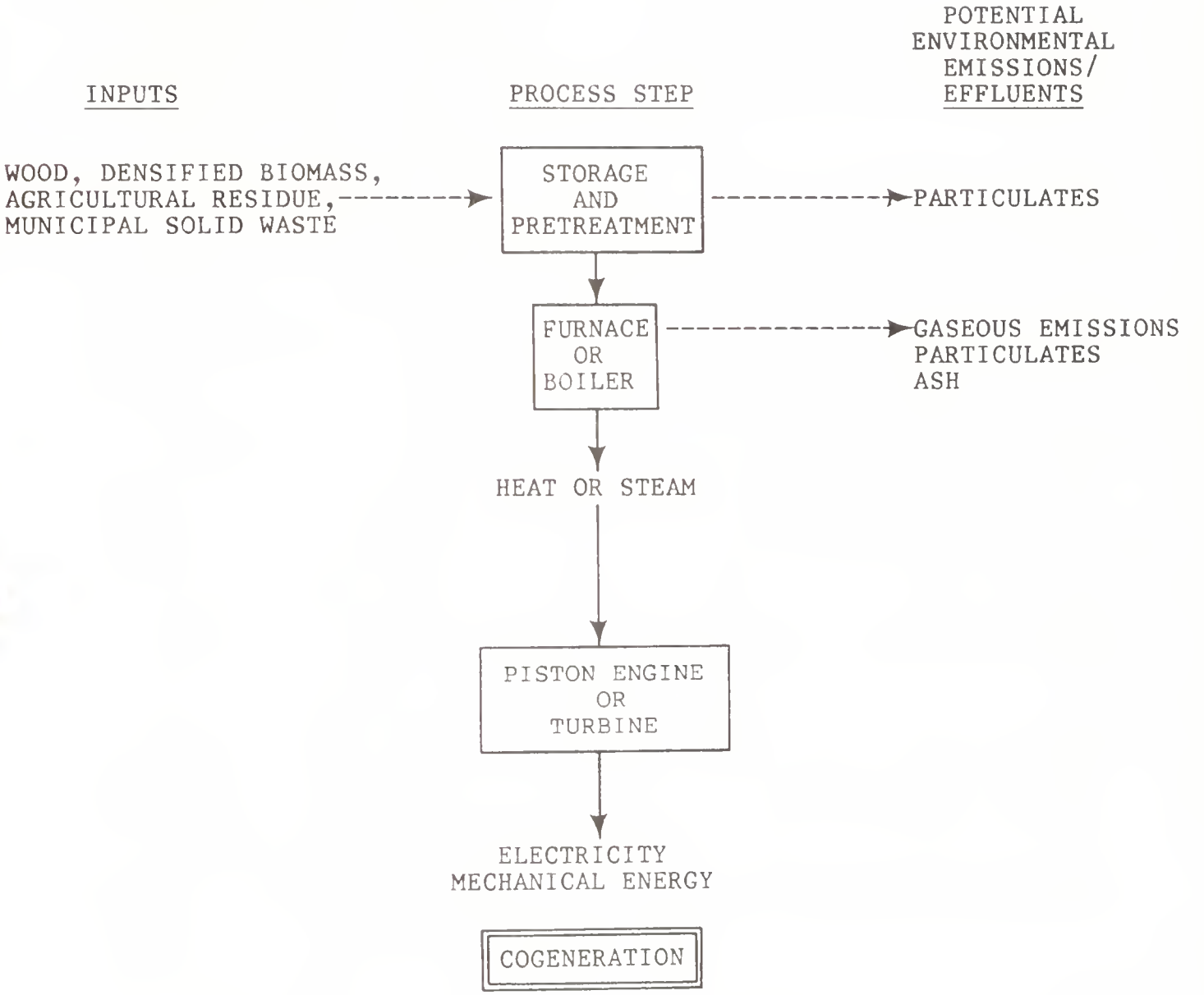
The main environmental concern with biogas digesters is that digested sludge and wastewater cannot be discharged into state waters. An animal confinement facility may also require a Montana Pollutant Discharge Elimination System (MPDES) Permit as a point source. (See Water Quality, pages 42-43 and 64-67.)

Solid and hazardous waste disposal permits are not required as long as wastes are disposed of at licensed facilities. There are detailed reporting requirements for hazardous waste disposal. (See Waste Management, pages 40-42 and 62-64.)

CONSTRUCTION AND LAND-USE PERMITS

The biogas digester and biogas handling equipment must comply with all mechanical, electrical, and building codes. (See Building, Mechanical, Electrical, and Plumbing, pages 53-56.)

CURRENT TECHNOLOGIES
FIGURE 4: COGENERATION



COGENERATION

Cogeneration is an energy production process involving the sequential generation of heat or steam and electricity or mechanical energy using a single heat source. Biomass powered furnaces, boilers, or engines can cogenerate electricity for on-site use or sale to a utility. Electric power generators can use the heat they cogenerate for on-site process heat. Fuel saving is the major incentive for the use of cogeneration.

For a list of cogeneration projects in Montana, see Appendix A, "Biomass Energy Projects," page 95.

ENVIRONMENTAL PERMITS

Biomass-fired furnaces and boilers must meet state emission and air quality regulations. A permit is required from the Department of Health and Environmental Sciences (DHES), Air Quality Bureau for furnaces and boilers that have a heat input of 10,000,000 British thermal units (Btus) per hour if they are burning liquid or gaseous fuels, or 5,000,000 Btus per hour if they are burning solid fuel. The particulate emission rate for new fuel burning installations is shown in figure 12, page 37.

Prevention of Significant Deterioration (PSD) standards and National Ambient Air Quality standards (NAAQS) apply to major new sources of air pollution. (See Air Quality, pages 33-39 and 49-52.) Some municipalities have also adopted their own air pollution control programs. (See Urban Areas/Municipalities, page 79-80.)

Solid and hazardous waste disposal permits are not required as long as wastes are disposed of at licensed facilities. There are detailed reporting requirements for hazardous waste disposal. (See Waste Management, pages 40-42 and 62-64.)

CONSTRUCTION AND LAND-USE PERMITS

Because many cogeneration projects are proposed for urban areas, it is very important that the local planning department be consulted to determine zoning requirements and land-use permits. (See Urban Areas/Municipalities, page 79-80.)

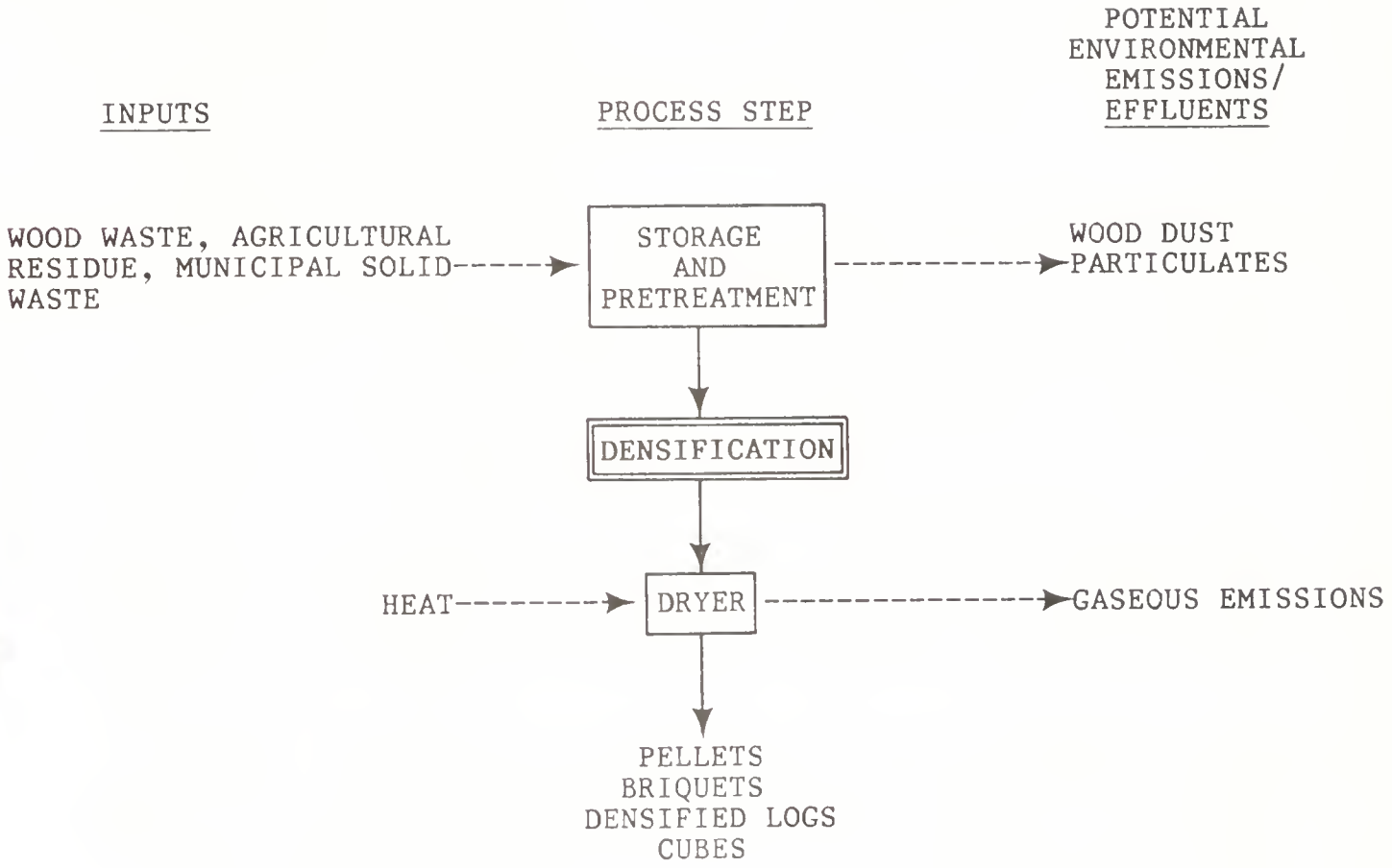
Boilers and boiler operators must be licensed by the Department of Labor and Industry (DOLI), Workers' Compensation Division, Safety Bureau. (See Occupational Safety and Health, pages 60-62 and 78-79.)

SPECIAL PERMITS

A cogeneration facility must be certified as a qualified facility (QF) to operate in Montana. The Federal Energy Regulatory Commission (FERC) controls the certification process for a QF. The Montana Public Service Commission (PSC) determines rates and conditions of those rates for contracts between cogenerators and public utilities. (See Cogeneration and Small Power Production, pages 70-74.)

If the cogeneration plant produces more than 50 megawatts, then permits may be required by the Department of Natural Resources and Conservation. (See Major Facility Siting Act, pages 58-59.)

CURRENT TECHNOLOGIES
FIGURE 5: Ddensification



DENSIFICATION

Dried compressed pellets, briquets, densified logs, and cubes are called densified biomass fuel and can be made from wood and forestry waste, agricultural residue, or municipal solid waste. The densified biomass can be used in wood stoves, furnaces, and fireplaces. The greater potential for increased use as an alternative fuel is in large furnaces and boilers for process heat, steam, or electric generation.

For a list of current densification projects in Montana, see Appendix A, "Biomass Energy Projects," page 91.

ENVIRONMENTAL PERMITS

Fuel processing plants have the potential of emitting air pollutants during the drying process. The site of a facility, and type of combustion source and equipment will determine the permit requirements. (See Air Quality, pages 33-39 and 49-52.)

Solid and hazardous waste disposal permits are not required as long as wastes are disposed of at licensed facilities. There are detailed reporting requirements for hazardous waste disposal. (See Waste Management, pages 40-42 and 62-64.)

CONSTRUCTION AND LAND-USE PERMITS

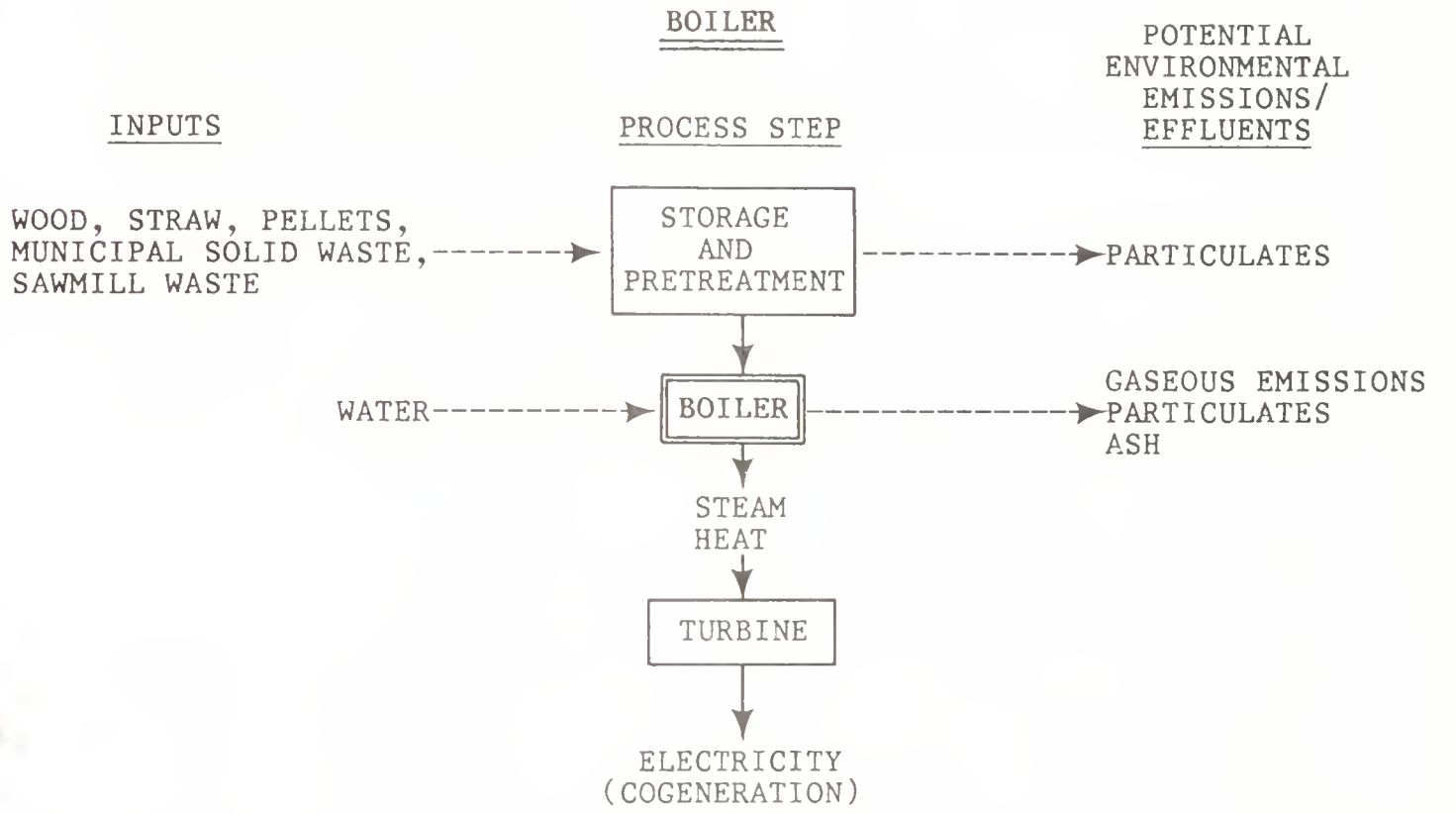
Densification facilities are usually located in industrial areas or near sources of forest and agricultural residue. Local building and planning agencies should be consulted before any construction begins. The facility is required to comply with all building, mechanical, and electrical codes. (See Building, Mechanical, Electrical, and Plumbing, pages 53-56.)

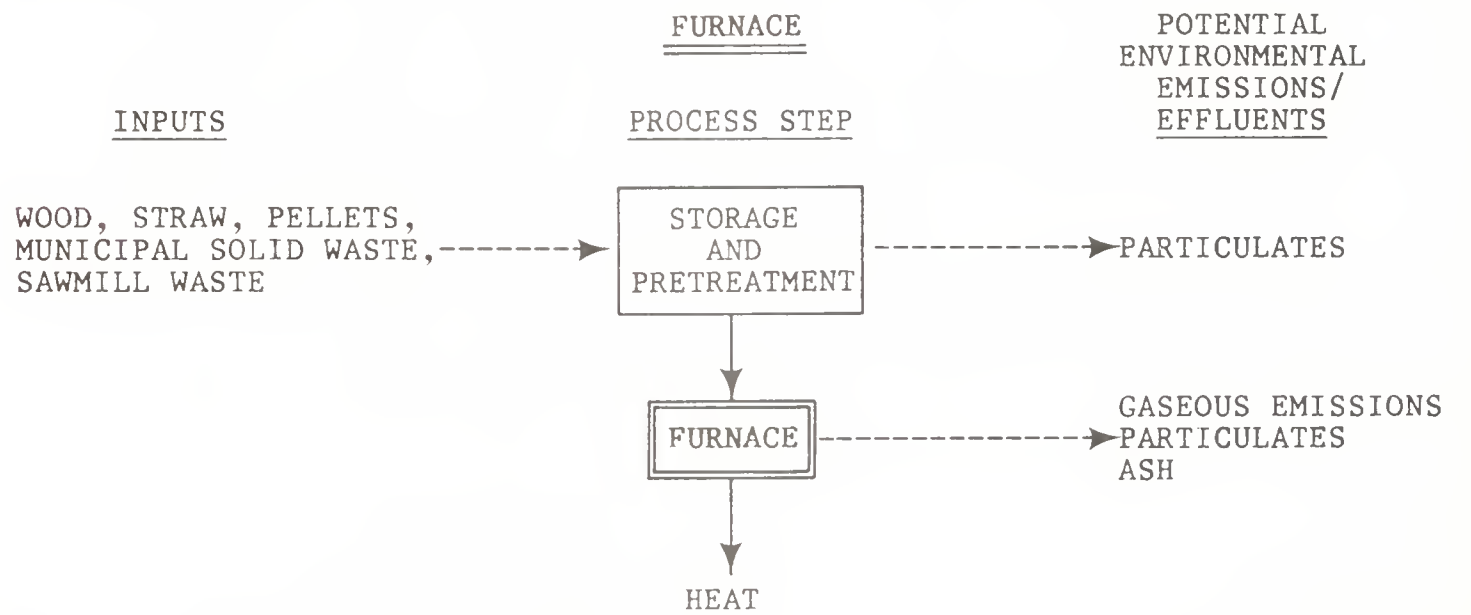
SPECIAL PERMITS

Timber and slash removal permits are required from the appropriate state or federal agency for commercial harvesting of trees or forest residue from state or federal lands. (See Forest Areas, pages 56-57 and 74.)

The densified wood product is considered a manufactured wood product. Instate transportation of the densified wood product must be by a carrier approved by the Interstate Commerce Commission (ICC) or by the producer.

CURRENT TECHNOLOGIES
FIGURE 6: DIRECT COMBUSTION





DIRECT COMBUSTION: BOILERS AND FURNACES

Direct combustion of biomass ranges from burning wood in fireplaces and stoves to burning densified biomass to yield process heat or steam, and/or electric power generation. Direct combustion is the simplest biomass technology and may be very economical if the biomass resource is nearby.

For a list of current commercial direct combustion projects in Montana, see Appendix A, "Biomass Energy Projects," pages 92-94.

ENVIRONMENTAL PERMITS

Biomass-fired furnaces and boilers must meet state emission and air quality regulations. A permit is required from the Department of Health and Environmental Sciences (DHES), Air Quality Bureau for furnaces and boilers that have a heat input of 10,000,000 British thermal units (Btus) per hour if they are burning liquid or gaseous fuels or 5,000,000 Btus per hour if they are burning solid fuel. The particulate emission rate for new, fuel-burning installations is shown in figure 12, page 37.

Prevention of Significant Deterioration (PSD) standards and National Ambient Air Quality Standards (NAAQS) apply to major new sources of air pollution. (See Air Quality, pages 33-39 and 49-52.) Municipalities and counties may also establish a local air pollution control program that regulates and controls emissions from new combustion sources. (See Urban Areas/Municipalities, page 79-80.)

Solid and hazardous waste disposal permits are not required as long as wastes are disposed of at licensed facilities. There are detailed reporting requirements for hazardous waste disposal. (See Waste Management, pages 40-42 and 62-64.)

CONSTRUCTION AND LAND-USE PERMITS

All furnaces and boilers must have local building permits. The type and location of the project will determine specific permit and zoning needs. Boilers and boiler operators must be licensed by the Department of Labor and Industry (DOLI), Workers' Compensation Division, Safety Bureau. (See Occupational Safety and Health, pages 60-62 and 78-79.)

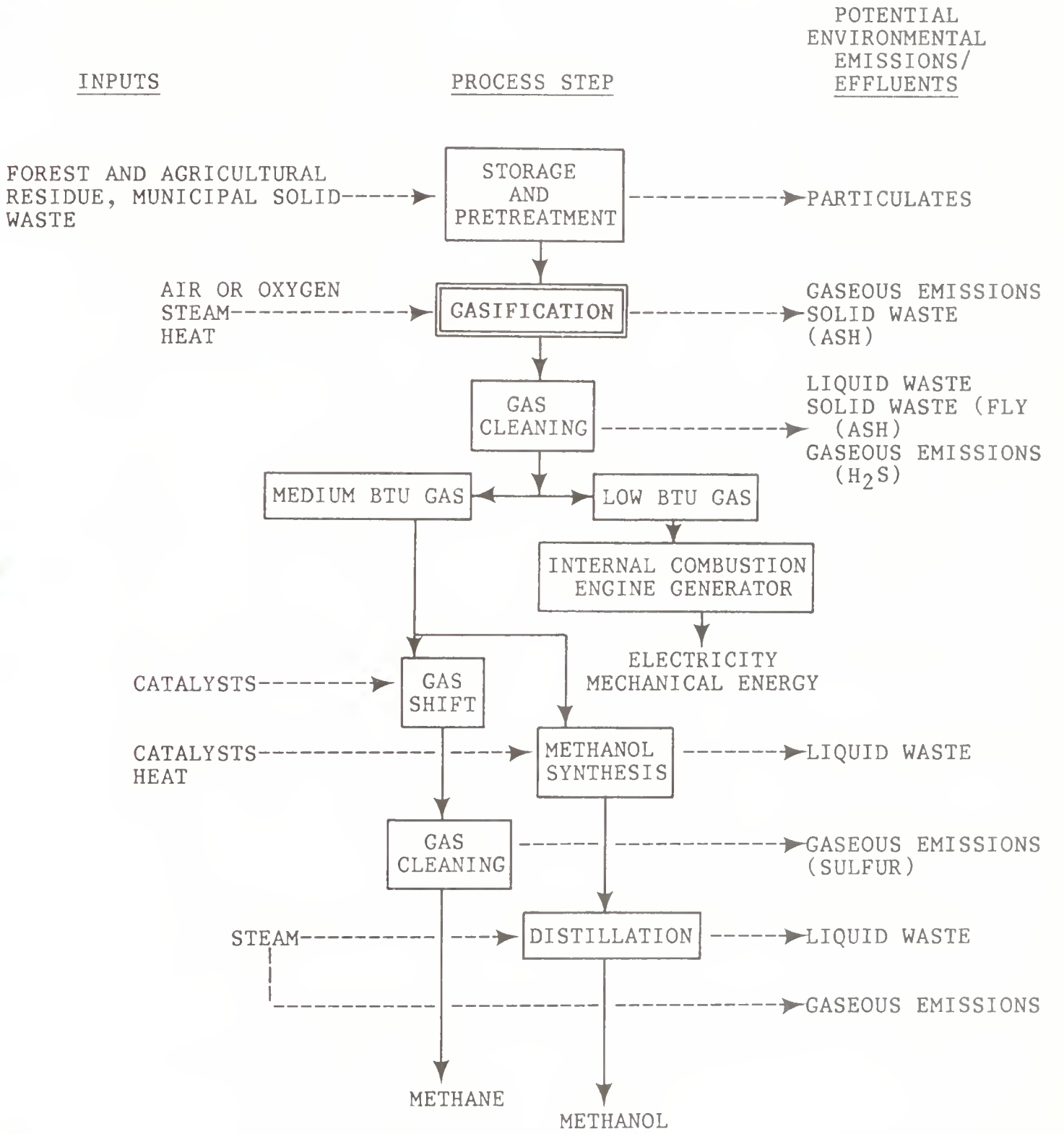
SPECIAL PERMITS

Timber and slash removal permits are required from the appropriate state or federal agency for commercial harvesting of trees or forest residue from state and federal forests. (See Forest Areas, pages 56-57 and 74.)

TABLE 3: DEVELOPING TECHNOLOGIES

TECHNOLOGY	MAJOR BIOMASS RESOURCE INPUT	ENERGY PRODUCTS
GASIFICATION	FOREST AND AGRICULTURAL RESIDUE, MUNICIPAL SOLID WASTE	METHANE, PRODUCER GAS, METHANOL
LANDFILL GAS	MUNICIPAL SOLID WASTE	METHANE, BIOGAS
LIQUEFACTION	FOREST AND AGRICULTURE RESIDUE, MUNICIPAL SOLID WASTE, FOREST INDUSTRY WASTE	HYDROCARBONS (OIL)
OILSEED EXTRACTION	AGRICULTURAL CROPS (SUNFLOWERS, SAFFLOWERS)	DIESEL FUEL SUBSTITUTE
PYROLYSIS	FOREST AND AGRICULTURAL RESIDUE, FOREST INDUSTRY WASTE, MUNICIPAL SOLID WASTE	PRODUCER GAS, HYDROCARBONS (FUEL OIL), CHAR

DEVELOPING TECHNOLOGIES
FIGURE 7: GASIFICATION



GASIFICATION

Gasification refers to the conversion of solid biomass to an intermediate gaseous product. The process involves controlled combustion of the biomass under operating conditions that yield producer gas consisting of carbon monoxide (CO) and hydrogen (H2). Depending on the conditions of gasification, either low Btu gas (200 Btus per cubic foot) or medium Btu gas (600 Btus per cubic foot) is produced. Low Btu gas can be used directly to produce electricity, mechanical energy, or process heat. Medium Btu gas can be converted to either methane by the gas shift process or liquid methanol by the methanol shift process. While gasification technology has been around since World War II, it is considered a developing technology because there are relatively few reliable and efficient commercial gasifiers in operation. Gasification is a developing technology in Montana.

ENVIRONMENTAL PERMITS

Gasification technology involves many process steps, each of which discharge solid waste, liquid waste, and/or gaseous emissions. The process equipment should be designed with the best available control technology (BACT) to minimize potential air pollution. The Department of Health and Environmental Sciences (DHES), Air Quality Bureau should be contacted for the appropriate air and water discharge permits. (See Air Quality, pages 33-39 and 49-52; Water Quality, pages 42-43 and 64-67.) Municipalities and counties may establish a local air pollution control program. (See Urban Areas and Municipalities, page 79-80.)

Solid and hazardous waste disposal permits are not required as long as wastes are disposed of at licensed facilities. There are detailed reporting requirements for hazardous waste disposal. (See Waste Management, pages 40-42 and 62-64.)

CONSTRUCTION AND LAND-USE PERMITS

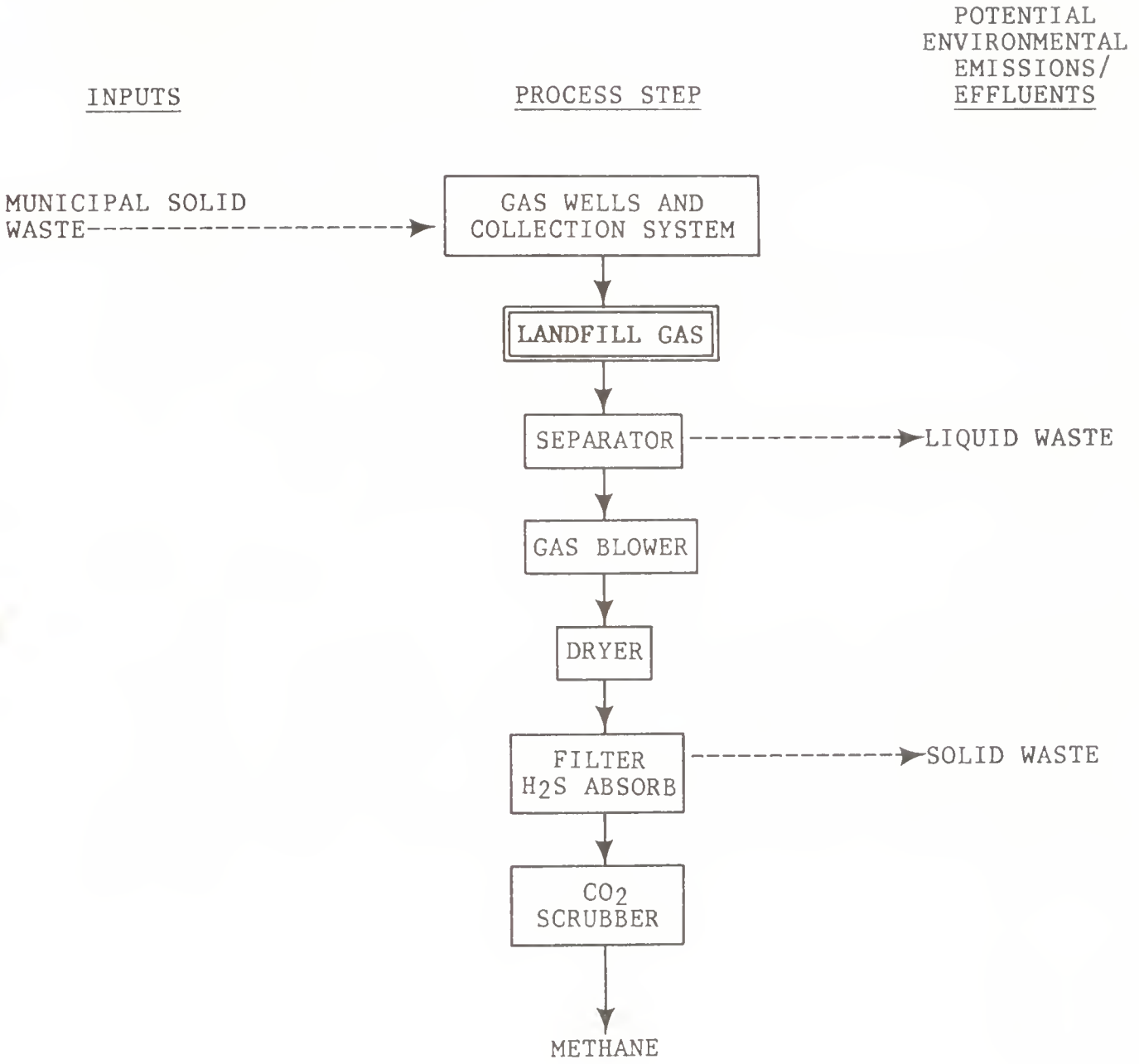
Gasifiers are required to comply with all building, mechanical, electrical, and plumbing codes. (See Building, Mechanical, Electrical, and Plumbing, pages 53-56.) Siting the facility depends on how well potential environmental impacts can be mitigated.

Boilers and boiler operators must be licensed by the Department of Labor and Industry (DOLI), Workers' Compensation Division, Safety Bureau. (See Occupational Safety and Health, pages 60-62 and 78-79.)

SPECIAL PERMITS

Timber and slash removal permits are required from the appropriate state or federal agency for commercial harvesting of trees or forest residue from state and federal forests. (See Forest Areas, pages 56-57 and 74.)

DEVELOPING TECHNOLOGIES
FIGURE 8: LANDFILL GAS



LANDFILL GAS

Municipal solid waste, which has a relatively high content of organic matter, is usually disposed of in landfills. When the organic waste decomposes, it generates biogas consisting of approximately 50% methane, the major component of natural gas. Only the large municipal landfills in Montana have enough waste to be adequate sources of landfill gas. Without efficient capture and use of the biogas generated, projects relying on this source would not be feasible. Landfill gas is a developing technology in Montana.

ENVIRONMENTAL PERMITS

Landfill gas technology involves the capture and processing of biogas that is already being generated. Environmental permits will be required for any solid, liquid, or gaseous effluents that leave the landfill site.

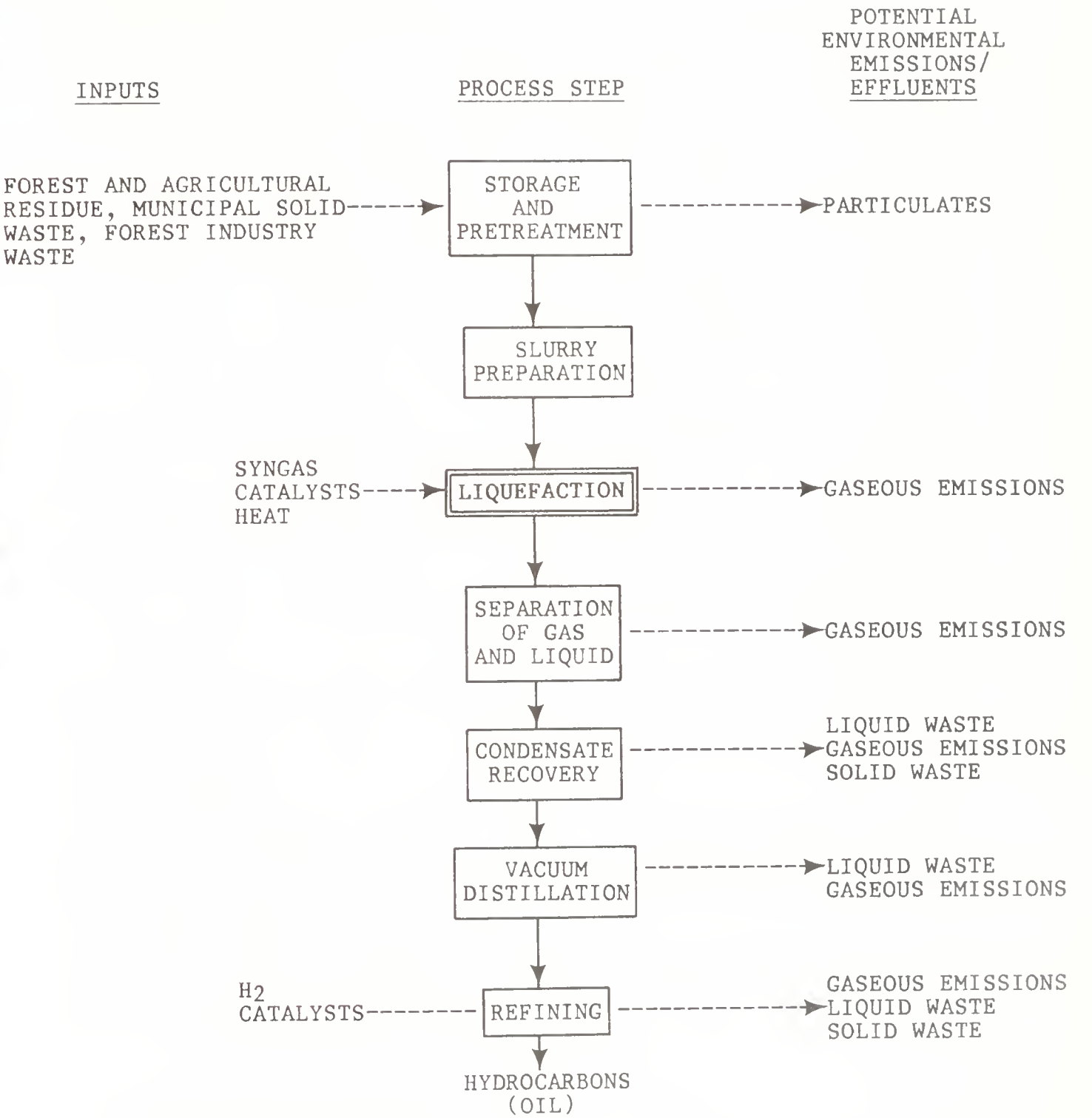
CONSTRUCTION AND LAND-USE PERMITS

Biogas processing and handling equipment must meet building, mechanical, and electrical codes. (See Building, Mechanical, Electrical, and Plumbing, pages 53-56.) Equipment must be designed and maintained to handle the explosive and flammable gases.

SPECIAL PERMITS

Landfill gas is considered a natural gas well and comes under the jurisdiction of all the laws and rules that pertain to gas wells. Montana law (MCA 82-11-101 et seq.) requires a permit before any drilling commences. Administrative rules (A.R.M. 36.22.601 et seq.) cover drilling, well spacing, safety, production, abandonment, and pricing. Information can be obtained from the Montana Department of Natural Resources and Conservation, Oil and Gas Division. A producer must pay a license tax of 2/10 of 1% of the market value of each 10,000 cubic feet of natural gas produced.

DEVELOPING TECHNOLOGIES
FIGURE 9: LIQUEFACTION



LIQUEFACTION

Liquefaction involves the addition of hydrogen to organic compounds to obtain an oil with a high hydrogen-to-carbon ratio. The biomass feedstocks that can be converted with this technology are forest and agricultural residues and municipal solid waste. The process takes place under high pressure and temperature. Several liquefaction schemes are under development with different feedstocks, reactor designs, catalysts, and operating conditions. Liquefaction is a developing technology in Montana.

ENVIRONMENTAL PERMITS

Environmental emissions from a biomass liquefaction facility will vary depending on the feedstock and specific liquefaction scheme used. Air and water discharge permits will be required for gaseous emissions and liquid waste streams. (See Air Quality, pages 33-39 and 49-52; Water Quality, pages 42-43 and 64-67.)

Solid and hazardous waste disposal permits are not required as long as wastes are disposed of at licensed facilities. There are detailed reporting requirements for hazardous waste disposal. (See Waste Management, pages 40-42 and 62-64.)

CONSTRUCTION AND LAND-USE PERMITS

New technologies, especially ones with potential environmental impacts, will be carefully scrutinized by state and local officials and the public. Allow plenty of time in the planning process for public hearings and comment periods, and for working closely with local planning and zoning departments to get land-use permits.

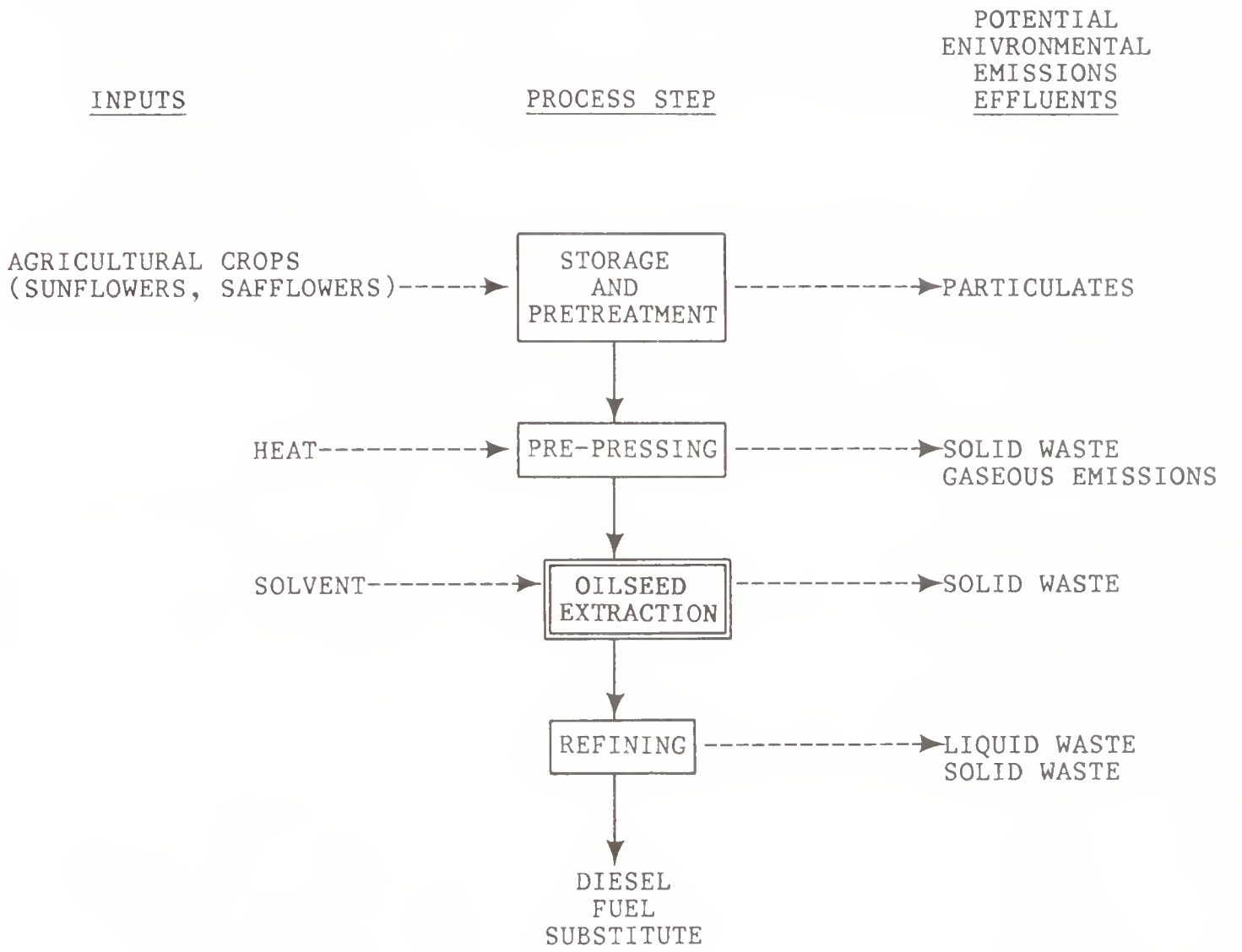
Boilers and boiler operators must be licensed by the Department of Labor and Industry (DOLI), Workers' Compensation Division, Safety Bureau. (See Occupational Safety and Health, pages 60-62 and 78-79.)

SPECIAL PERMITS

Biomass facilities usually do not fall under Montana's Major Facility Siting Act. However, if the liquefaction plant produces more than 25,000 barrels per day of liquid hydrocarbons, a Certificate of Public Need and Environmental Compatibility may be required from the Board of Natural Resources and Conservation. (See Major Facility Siting, page 58-59.)

Timber and slash removal permits are required from the appropriate state or federal agency for commercial harvesting of trees or forest residue from state and federal forests. (See Forest Areas, pages 56-57 and 74.)

DEVELOPING TECHNOLOGIES
FIGURE 10: OILSEED EXTRACTION



OILSEED EXTRACTION

Oil seeds can be pressed, and then treated with a solvent to produce a vegetable oil that can be refined into a crude oil for use as a diesel substitute. Of the biomass technologies reviewed in this report, only oilseed extraction has the potential of providing a diesel fuel substitute that does not require significant engine modification. Present fuel costs, however, make oilseed extraction uneconomical. Oilseed extraction is a developing technology in Montana.

ENVIRONMENTAL PERMITS

Potential emissions from an oilseed extraction process should be minimal. Solid byproducts should be recovered and marketed as animal feed. Waste water will have high biological oxygen demand (BOD) and will require water discharge permits. (See Water Quality, page 42-43 and 64-67.)

Solid and hazardous waste disposal permits are not required as long as wastes are disposed of at licensed facilities. There are detailed reporting requirements for hazardous waste disposal. (See Waste Management, pages 40-42 and 62-64.)

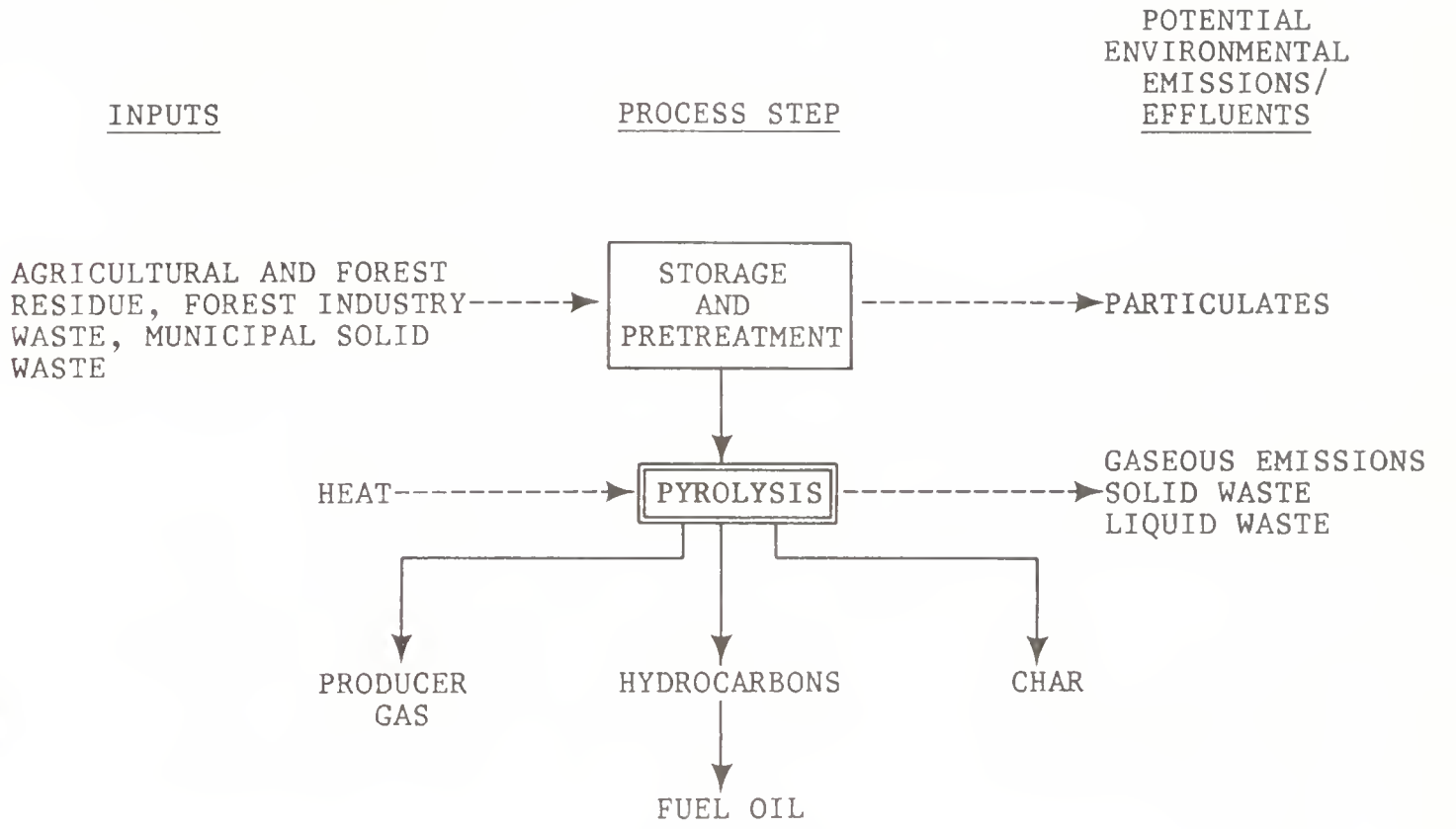
CONSTRUCTION AND LAND-USE PERMITS

Oilseed extraction facilities will probably be located in rural or small urban areas near the source, which could be a crop of either sunflowers or safflowers. Industrial development zones may not exist, so developers should plan on working closely with local planning departments or boards of county commissioners to get land-use permits that allow access to required utilities and water. (See Local Areas, pages 77-78.) The plant will also require building, mechanical, electrical and plumbing permits. (See Building, Mechanical, Electrical and Plumbing, pages 53-56.)

SPECIAL PERMITS

A feed marketing permit from the state Department of Agriculture (DOA), Plant Industry Division is required for byproducts which are sold as commercial feed in Montana. The commercial feed must be registered and comply with labeling format and other requirements as stated in the DOA rules. Additionally, anyone marketing or housing grain, including oil seeds, may have to obtain an agricultural commodity dealer's license or a warehouseman's license. (See Agriculture, page 47-49.)

DEVELOPING TECHNOLOGIES
FIGURE 11: PYROLYSIS



PYROLYSIS

Pyrolysis is the chemical decomposition of biomass with heat in the absence of oxygen. Biomass feedstock is heated to temperatures from 800 to 1400 degrees Farenheit and allowed to smolder, but no oxygen is introduced to support combustion. Pyrolysis results in three products: producer gas, fuel oil, and charcoal. The mixture and quality of products depends on the biomass used and process operating conditions. Pyrolysis is a developing technology that is receiving interest as an energy production process with technological improvements designed to improve efficiency and economics.

ENVIRONMENTAL PERMITS

The quantity and type of environmental emissions depend on the feedstock and size, configuration, and operating conditions of the pyrolysis reactor. Air and water discharge permits will be required from the state Department of Health and Environmental Sciences. (See Air Quality, pages 33-39 and 49-52; Water Quality, pages 42-43 and 64-67.)

Solid and hazardous waste disposal permits are not required as long as wastes are disposed of at licensed facilities. There are detailed reporting requirements for hazardous waste disposal. (See Waste Management, pages 40-42 and 62-64.)

CONSTRUCTION AND LAND-USE PERMITS

The local planning department must approve all siting and land-use permits. In addition, building, mechanical, electrical, and plumbing permits are necessary before construction begins. (See Building, Mechanical, Electrical, and Plumbing, pages 53-56.)

SPECIAL PERMITS

Timber and slash removal permits are required from the appropriate state or federal agency for commercial harvesting of trees or forest residue from state and federal forests. (See Forest Areas, pages 56-57 and 74.)

ENVIRONMENTAL CONSIDERATIONS

This section is designed to assist developers and government officials in identifying and complying with applicable environmental laws and regulations. These laws and regulations are intended to promote biomass energy projects that contribute to the energy future of Montana without adversely affecting its environment.

The Montana Environmental Policy Act (MEPA) applies to major state actions that significantly affect the quality of the human environment. The rules implementing this act define the circumstances that require a preliminary environmental review (PER) or an environmental impact statement (EIS). They also establish fees, comment periods, public hearings and time requirements. Each state agency has adopted administrative rules for this law.

Each project is unique, and may require a detailed analysis of air quality, water quality, geology, and many other resources. Location of the facility is critical in evaluating the impact of potential pollution discharges. (See "table 4: Biomass Energy Technologies and Potential Environmental Impacts", page 32.) Except for air quality permits, no exceptions are made for the size of the facility. It is necessary for biomass energy developers to contact the appropriate bureau of the Department of Health and Environmental Sciences (DHES) to find out the environmental status of their proposed project and location.

TABLE 4: BIOMASS ENERGY TECHNOLOGIES AND POTENTIAL ENVIRONMENTAL IMPACTS

TECHNOLOGY	POTENTIAL ENVIRONMENTAL IMPACT								
	Water Pollution Discharge	Air Pollution[1]						Solid Waste Disposal	Hazardous Waste
		Sulfur Oxides	Nitrogen Oxides	PAH[2] Organics	Particu-lates	Odor	Carbon Monoxide		
Alchol Fermentation	x	x	x	x	x	x	x	x	x
Anaerobic Digestion	x					x		x	
Cogeneration		x	x	x	x	x	x	x	x
Densification		x	x	x	x	x	x	x	
Direct Combustion (Furnace, Boiler)		x	x	x	x	x	x	x	x
Gasification	x	x	x	x	x	x	x	x	x
Landfill Gas	x					x		x	
Liquefaction	x	x	x	x	x	x	x	x	x
Oilseed Extraction	x				x	x		x	x
Pyrolysis	x	x	x	x	x	x	x	x	x

[1] Potential Air Pollution depends on size of burner and type of fuel.

[2] PAH is polyaromatic hydrocarbons.

AIR QUALITY

A permit from the Department of Health and Environmental Sciences (DHES), Air Quality Bureau is required for the construction, installation, and operation of equipment or facilities that may directly or indirectly cause or contribute to air pollution. Exceptions include, but are not limited to, residential heating units (with some restrictions); food service establishments; any activity or equipment associated with the use of agricultural land or the planting, production, harvesting, or storage of agricultural crops; ventilating systems used in buildings to house animals; road construction (except stationary sources); and other sources which emit less than specified amounts. A complete list of exceptions is provided in A.R.M. 16.8.1102. The city or county may administer its own air pollution permit program in lieu of the DHES permit program.

Biomass energy facilities that emit any air pollutants should calculate the potential emissions at maximum design capacity after the application of best available control technology (BACT). A permit is required from the DHES, Air Quality Bureau for biomass projects which have the potential to emit more than 25 tons per year of any pollutant except lead, in which case a permit is required at 5 tons a year. Some air pollutants regulated by Montana are listed in table 5 on page 35. This list of pollutants may be subject to change as new rules are developed.

The emission standard most applicable to biomass energy projects is the rule for new fuel-burning installations shown in figure 12 on page 37. Notwithstanding the emission standards in figure 12, all point sources must use BACT to meet these emission requirements. BACT may be more stringent than those values shown in figure 12.

Prevention of Significant Deterioration (PSD) standards apply when a major new source of air pollution is proposed in an area that has an ambient air quality better than the applicable standards. In these cases, a more stringent review procedure may apply to minimumize air quality degradation within the state. The review may include such requirements as one year of preapplication baseline data, control technology review, and air quality impact modeling. When the permit calendar is developed, these requirements should be taken into consideration, because they can extend the permit application time requirements well over a year in some cases. Class I areas, which allow small increases in pollution, include national parks, some wilderness areas, and some Indian reservations. Class I areas are listed in table 7 on page 38 and figure 13 (the map of Montana on page 39), shows their locations. The rest of Montana is designated Class II for air quality purposes.

The 1977 Federal Clean Air Act Amendments required classification of the areas of the state according to whether they meet the National Ambient Air Quality Standards (NAAQS). The DHES classified each area into one of three categories: attainment,

which is meeting the standards; nonattainment, which is exceeding the allowable limits for pollutants; or unclassified, which is insufficient information to determine the status. The areas which were designated nonattainment were required to develop state implementation plans to control emissions and bring the areas into compliance. Detailed information on classification requirements and attainment and nonattainment areas is available from the DHES, Air Quality Bureau. Biomass projects locating in nonattainment areas may be required to meet more stringent air pollution emission rates depending on the existing air quality in the locale where the project is to be sited.

An air-quality permit to construct or operate a new or altered air pollution source cannot be issued unless the source is able to comply with the ambient air quality standards, emission limitations, and other rules adopted under the Montana Clean Air Act and the applicable requirements of the Federal Clean Air Act. (See "table 5: Some Air Pollutants Regulated By the State of Montana", page 35.) The city or county may administer its own air pollution permit program in lieu of the DHES permit program. The Environmental Protection Agency (EPA) has jurisdiction over Indian reservations, except for incorporated municipalities on those reservations. (See Indian Reservations, pages 75-77.)

Visible emissions from pollution sources such as a teepee burner, boiler, power plant, or any stack or emission point that might exhibit a plume are regulated by the air-quality rules in the state and federal rules. All point sources have opacity limitations. These are listed in the air quality rules and have standards ranging from 10% to 40% depending on the type and age of the sources. Visible emission documentation on a pollution source is performed by a trained observer in the field.

During the forest fire season (May 1-September 30 or as extended) open-burning permits are required from the recognized protection agency for the area to ignite or set a forest fire; to burn slash; to set a land-clearing or debris-burning fire, or any open fire on forest lands. The recognized protection agency may be the county sheriff or board of commissioners, the Department of State Lands, Forestry Division, or the U.S. Forest Service. In addition, air pollution permits are required from the DHES, Air Quality Bureau at all times of the year for burning or other activities that may pollute the air. (See Air Quality, pages 33-39 and 49-52.)

The DHES is also responsible for enforcement of odor control rules. A person operating any business or using any machine, equipment, device, facility, or process which discharges into the outdoor air any odorous matter or vapors, gases, dusts, or combination thereof which create odors is subject to regulation. That person is required to provide, properly install, and maintain in good working order and operation, odor control devices or procedures as specified by the department.

TABLE 5: SOME AIR POLLUTANTS REGULATED BY THE STATE OF MONTANA*

Pollutant
Asbestos
Benzene
Carbon Monoxide (CO_2)
Fluorides
Hydrogen Sulfide (H_2S)
Nitrogen Oxides
Ozone
Particulate Matter
Sulfur Dioxide
Sulfur-Reduced Sulfur Compounds (including H_2S)
Sulfur-Total Reduced Sulfur (including H_2S)
Sulfuric Acid Mist
Trace Metals
Beryllium
Lead
Mercury
Phosphorus
Vinyl Chloride

*Source: A.R.M 16.8.921 (30), page 16-179; 40 CFR Part 60 and 61

TABLE 6: MONTANA AND NATIONAL AIR QUALITY STANDARDS

Pollutant	Montana Standard	Federal Primary Standard	Federal Secondary Standard
Total Suspended Particulates	75 ug/m^3 annual average 200 ug/m^3 24-hr average*	75 ug/m^3 annual geometric mean 260 ug/m^3 24-hr average*	60 ug/m^3 annual geometric mean 150 ug/m^3 24-hr average*
Sulfur Dioxide	0.02 ppm annual average 0.10 ppm 24-hr average* 0.50 ppm 1-hr average**	0.03 ppm annual average 0.14 ppm 24-hr average*	0.5 ppm 3-hr average*
Carbon Monoxide	9 ppm 8-hr average* 23 ppm hourly average*	9 ppm 8-hr average* 35 ppm 1-hr average*	9 ppm 8-hr average*
Nitrogen Dioxide	0.05 ppm annual average	0.05 ppm annual average	0.05 ppm annual average
Photochemical Oxidants (ozone)	0.10 hourly average*	0.12 ppm 1-hour average*	0.12 ppm 1-hr average*
Lead	1.5 ug/m^3 90-day average	1.5 ug/m^3 calendar quarter average	None
Foliar Fluoride	35 ug/g grazing season 50 ug/g monthly average	None	None
Hydrogen Sulfide	0.05 ppm hourly average*	None	None
Settled Particulate (Dustfall)	10 gm/m^2 30-day average	None	None
Visibility	Particle scattering coefficient of 3 x 10^{-5} per meter annual average***	None	None

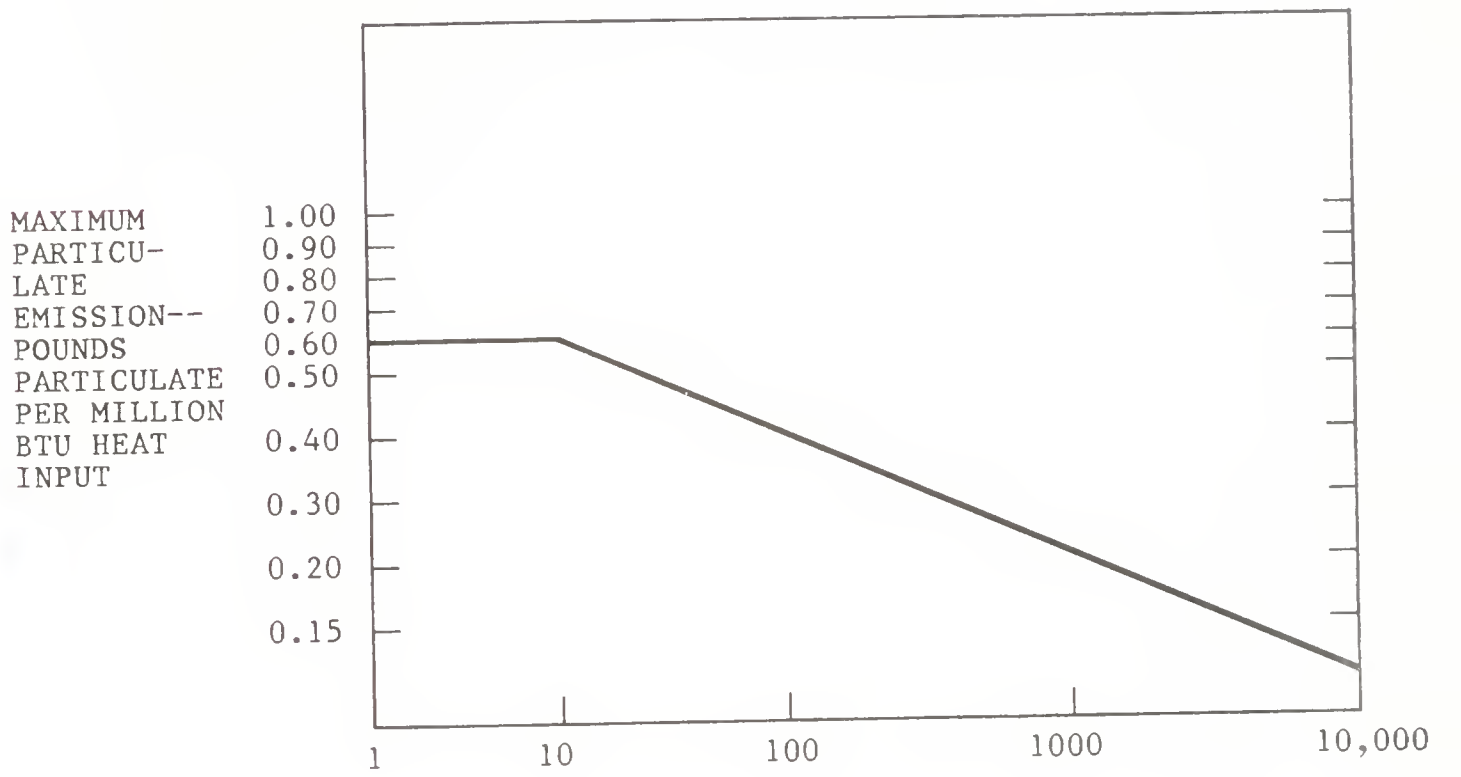
ug/m^3 - micrograms pollutant per cubic meter of sampled air
ppm - parts pollutant per million parts of sampled air

*Not to be exceeded more than once per year.

**Not to be exceeded more than 18 times per year.

***Applies to PSD mandatory Class I areas.

FIGURE 12: MAXIMUM EMISSION OF PARTICULATE MATTER FROM NEW FUEL-BURNING INSTALLATIONS*

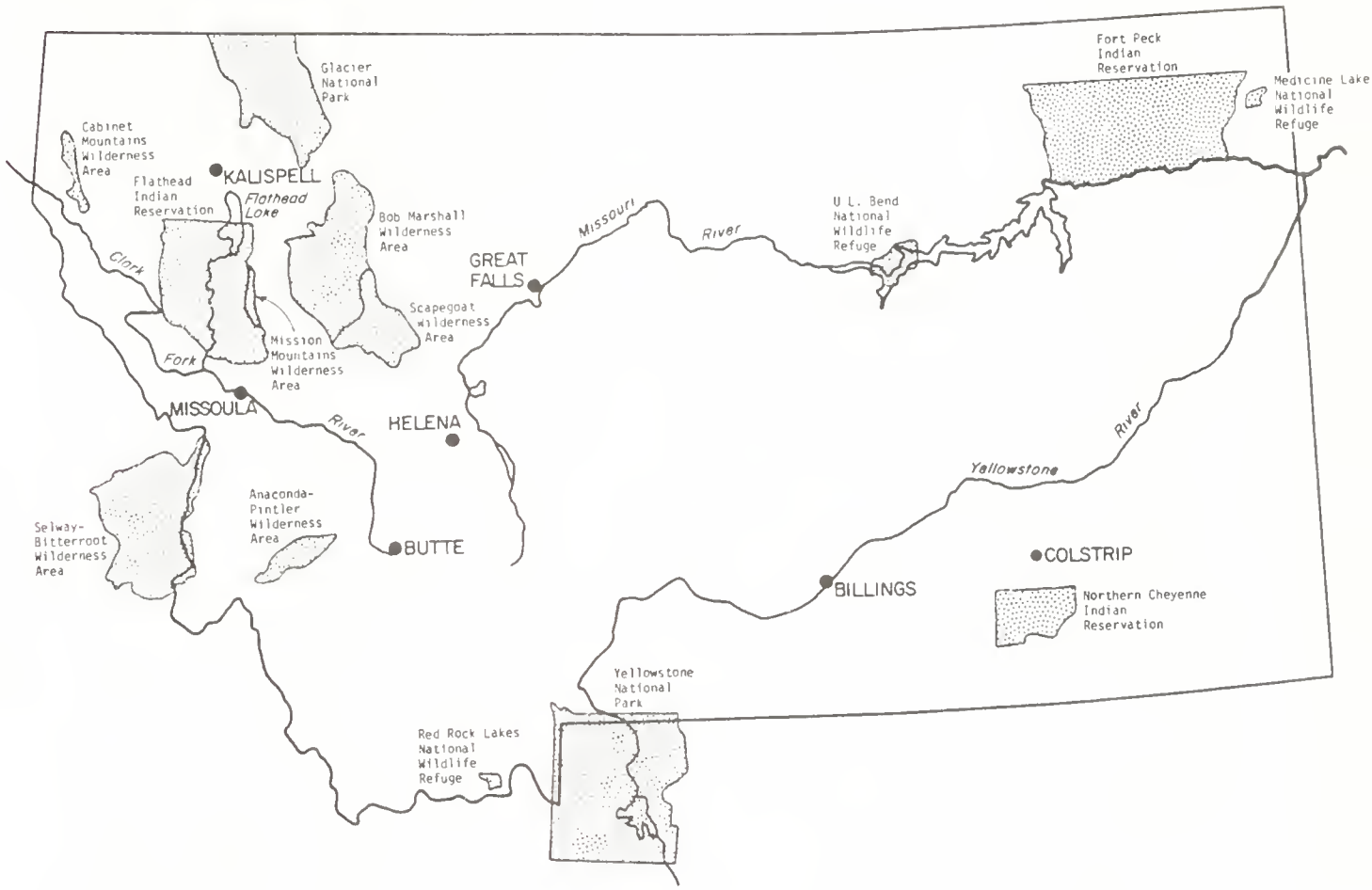


*Source: ARM, 16.8.1403, page 16-228

TABLE 7: MONTANA PSD CLASS I AREAS

1. Glacier National Park
2. Cabinet Mountain Wilderness
3. Flathead Indian Reservation
4. Mission Mountain Wilderness
5. Bob Marshall Wilderness
6. Scapegoat Wilderness
7. Selway Bitterroot Wilderness
8. Anaconda-Pintler Wilderness
9. Gates of the Mountains Wilderness
10. Red Rock Lakes National Wildlife Refuge
11. Yellowstone National Park
12. U L Bend Wildlerness Area
13. Northern Cheyenne Indian Reservation
14. Medicine Lake National Wildlife Refuge
15. Fort Peck Indian Reservation

FIGURE 13: MONTANA PSD CLASS I AREAS*



*Source: Montana Air Quality Data & Information Summary for 1984. Helena, MT, Dept. of Health and Environmental Sciences, Air Quality Bureau, 1985.

WASTE MANAGEMENT

Solid Waste Disposal (Nonhazardous)

"Solid waste" means all objectionable wastes, including, but not limited to: garbage; rubbish; hazardous wastes (See Waste Management, pages 62-64.); ashes; sludge from sewage treatment plants, water supply treatment plants, or air pollution control facilities; construction and demolition wastes; dead animals; discarded industrial appliances; and wood products or byproducts. It does not mean municipal sewage, industrial wastewater effluents, mining wastes regulated by the Department of State Lands (DSL), slash and forest debris regulated by the DSL, or marketable wood byproducts.

The Solid Waste Management System License is required from the Department of Health and Environmental Science, Solid and Hazardous Waste Bureau to establish and operate a solid waste management disposal facility. Sites for these facilities must be approved and licensed by DHES and validated by local health officials. Resource recovery systems that provide for the collection, separation, recycling, or recovery of solid wastes, including disposal of nonrecoverable waste residues are classified as solid waste management systems.

Generators of solid waste must dispose of that waste at a licensed solid waste management facility. Solid waste must be transported in a manner which prevents its discharge, dumping, spilling, or leaking from the transport vehicle. One possible exception is a person who owns or leases more than five acres of land, and wants to dispose of his own solid waste on that land. This is usually allowable as long as the disposal does not create a nuisance or public health hazard.

Problems may occur if leachate or contaminated water is produced when rain or other water passes through solid waste. The leachate can pick up various mineral, organic, or other contaminants, and then can contaminate surface or ground water. Point source discharges of pollutants into state waters are regulated by the Montana Water Quality Act and require either a Montana Pollutant Discharge Elimination System (MPDES) Permit or a Montana Groundwater Pollution Control System (MGPCS) Permit. (See Water Quality, pages 42-43 and 64-67.)

Hazardous Waste Disposal

Hazardous waste is any waste or combination of wastes which may occur in a solid, liquid, contained gaseous, or semi-solid form. A hazardous waste may, because of quantity, concentration, or physical, chemical or infectious characteristics cause or contribute to an increase in mortality or serious illness. In addition, it may pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. A waste

is categorized as a hazardous waste if it is included in the Environmental Protection Agency's (EPA's) rules listing specific hazardous wastes or if it demonstrates any of the characteristics of ignitability, corrosivity, reactivity, or toxicity under standard test procedures.

The Montana Hazardous Waste Act (MCA 75-10-401 et seq.) and the corresponding rules (A.R.M. 16.44.101 et seq.) were adopted to administer and enforce a hazardous waste program pursuant to the federal Resource Conservation and Recovery Act of 1976. The DHES regulates the permitting and siting of hazardous waste management facilities. DHES also has detailed reporting and monitoring requirements with which these facilities have to comply.

Anyone who generates or transports hazardous wastes is required to register with the DHES, Solid and Hazardous Waste Bureau and obtain an identification number. A generator is required to pay a sliding-scale fee based on the amount of waste generated annually, and to renew his registration annually. Beginning in September, 1986, anyone who produces 100 kilograms (or approximately 220 pounds) or more of hazardous wastes per month will be required to register and comply with all reporting and transporting rules. Detailed reporting rules require both generators to fill out manifest forms with the source, amount, and destination of the wastes. The transporter, as well as the receiving hazardous waste management facilty, must sign and date the manifest to acknowledge receipt of the waste shipment. This process helps the generator ascertain that the waste has reached its destination at a properly licensed hazardous waste disposal site. The DHES has established procedures for dealing with problems that occur in the transportation and reporting process.

The DHES may, by rule, prescribe conditions under which specified hazardous wastes or specified quantities of hazardous wastes may be disposed of at solid waste disposal sites licensed by DHES.

The hazardous waste rules also include regulations related to leaking underground storage tanks. These tanks include, but are not limited to, any one of a combination of tanks used to contain a regulated substance, the volume of which is 10% or more beneath the surface of the ground, and also include any underground pipes used to contain or transport a regulated substance and connected to a storage tank, whether the storage tank is entirely above ground, partially above ground, or entirely underground. If an owner or an operator of an underground storage tank discovers or is provided evidence that the tank may have leaked, he must immediately notify the department that a leak may exist.

Any person who violates sections of the Montana Hazardous Waste Act, the related rules, or a hazardous waste permit may be subject to civil or criminal penalties, which may include a fine or imprisonment.

Biomass energy producers are responsible for determining if any of their waste products or streams are hazardous wastes.

They are also responsible for properly collecting, storing, and recovering or transporting the hazardous waste to a licensed disposal site. The EPA has identified a number of hazardous wastes (40 CFR 261.1-261.33) which must be kept under control from their origin to their point of disposal.

Biomass energy facilities have the potential to generate hazardous wastes or waste streams that contain hazardous constituents, especially when they are not operating under ideal conditions. For instance, a municipal solid waste combustor which is not operating under ideal conditions can produce toxic substances such as hydrocarbons and creosote from incomplete combustion. These toxic substances should be captured by pollution control equipment or as ash from the incinerator and may need to be handled and disposed of as hazardous wastes. Under certain operating conditions, developing biomass energy technologies such as gasification, liquefaction, and pyrolysis have the potential to produce wood tar containing creosote, benzopyrene, and phenol. Plants that have the potential to generate hazardous wastes should be designed to operate and be operated under optimal conditions which are less likely to produce hazardous wastes. Plants that produce hazardous wastes either under normal operating conditions or less than ideal operating conditions must register with DHES as hazardous waste generators. They must present DHES with a plan for proper collecting, handling, storing, and transporting the hazardous waste to a licensed disposal site or must obtain a permit as a hazardous waste management facility.

Commercial products used in biomss production such as acids, bases, and solvents can be classified as hazardous wastes when they are discarded, spilled, leaked, or are left as residue in discarded drums. Biomass energy products such as methanol, butanol, hydrocarbons, and diesel fuel substitutes can, if spilled, be classified as hazardous wastes because they are combustible.

Biomass energy producers that use or produce commercial products that can be classified as hazardous wastes when discharged should register as hazardous waste generators with DHES, Solid and Hazardous Waste Bureau, and make arrangements for proper disposal of those wastes at a licensed disposal site. The registration and planning will decrease the possibility of being cited for spilling or improper handling of hazardous waste.

Acid and base effluent streams will not be subject to hazardous waste control if they are properly handled and neutralized under carefully controlled conditions.

WATER QUALITY

A permit from the Department of Health and Environmental Sciences (DHES), Water Quality Bureau is required to construct, modify, or operate a disposal system, or to construct or use any

outlet for discharge of sewage, industrial, or other wastes into state surface or ground waters. Plans and specifications for tailings ponds, leaching pads, and holding facilities must be submitted to the DHES for review and approval at least 180 days before commencement of operations.

The applicant for a water pollution discharge permit must file a Montana Pollutant Discharge Elimination System (MPDES) permit or a Montana Groundwater Pollution Control System (MGWPCS) permit application no less than 180 days prior to the operation of a point source. Application information must include plans and specifications, site plans, descriptions of adjacent state waters, soil conditions, groundwater characteristics, process and waste flow diagrams, and volume and nature of projected discharges. Applications for a short term exemption from water quality standards must be made on forms provided by the DHES.

All discharges of pollutants into state waters authorized by an MPDES or MGWPCS permit must be consistent with the conditions of the permit. The discharge of pollutants into state waters in excess of the permit's restrictions constitutes a violation of the permit. State waters must be free of discharges that settle to form sludge deposits; create floating debris; produce odors; create toxic concentrations harmful to human, animal, or plant life; or create conditions capable of producing undesirable aquatic life. (See Water Quality, pages 64-67.)

All biomass energy projects that discharge liquid or solid effluents into state surface or ground waters must get a permit from DHES. No exceptions are made for quantity or quality of the discharge. Biomass facilities are treated as a point source and are subject to applicable state effluent standards. The minimum state applicable effluent standards are those standards adopted by the U.S. Environmental Protection Agency (EPA).

The EPA standards are only a minimum, and DHES, through the MPDES permit process, can require stricter effluent standards to ensure enforcement of the state's water quality standards.

TABLE 8: PERMIT SUMMARY

ENVIRONMENTAL PERMITS

AIR QUALITY	PAGES 49-52
WASTE MANAGEMENT	PAGES 62-64
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SPECIFIC CATEGORIES OF PERMITS

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TABLE 9: PERMITS FOR CURRENT TECHNOLOGIES

PERMITS BY CATEGORY	ALCOHOL FERMENTATION	ANAEROBIC DIGESTION	COGEN-ERATION	DENSIFI-CATION	DIRECT COMBUSTION
AGRICULTURE	X				
AIR QUALITY	X	X	X	X	X
ALCOHOL PRODUCTION	X				
BUILDING, MECHANICAL, ELECTRICAL, & PLUMBING	X	X	X	X	X
FOREST AREAS	X		X	X	X
HIGHWAYS/ TRANSPORTATION	X	X	X	X	X
LAND USE	X	X	X	X	X
MAJOR FACILITY SITING			X		
OCCUPATIONAL SAFETY AND HEALTH	X	X	X	X	X
WASTE MANAGEMENT	X	X	X	X	X
WATER QUALITY	X	X			
WATER USE	X	X	X	X	X

TABLE 10: PERMITS FOR DEVELOPING TECHNOLOGIES

PERMITS BY CATEGORY	GASIFI-CATION	LANDFILL GAS	LIQUE-FACTION	OILSEED EXTRACTION	PYROLYSIS
AGRICULTURE				X	
AIR QUALITY	X		X	X	X
ALCOHOL PRODUCTION					
BUILDING, MECHANICAL, ELECTRICAL, & PLUMBING	X	X	X	X	X
FOREST AREAS	X		X		X
HIGHWAYS/ TRANSPORTATION	X		X	X	X
LAND USE	X	X	X	X	X
MAJOR FACILITY SITING			X		
OCCUPATIONAL SAFETY AND HEALTH	X	X	X	X	X
WASTE MANAGEMENT	X	X	X	X	X
WATER QUALITY	X	X	X	X	X
WATER USE	X	X	X	X	X

AGRICULTURE

PERMIT: Commodity Dealers License

COST: Annual license fees per facility are based on volume of grain handled in the previous year or estimated yearly volume by hundredweight (cwt). Fees are: 1-25,000--$25.00; 25,001-50,000--$50.00; 50,001-125,000--$75.00; 125,000-250,000--$100.00; 250,001-375,000--$125.00; over 375,000--$150.00. An additional fee of $25.00 for each truck operated as a part of the business of being a commodity dealer is required. A bond based on 2% of the value of the agricultural commodities purchased by the commodity dealer from the producer is required with a minimum bond of $20,000.

LAW: Montana Code Annotated (MCA) 80-4-601 et seq.

RULES: New rules pending as of 4/1/86

CONTACT: Department of Agriculture (DOA), Plant Industry Division

DESCRIPTION: Any person who engages in a business involving or, as a part of his business, participates in buying, exchanging, negotiating, or soliciting the sale, resale, exchange, or transfer of any agricultural commodity in the state of Montana is a commodity dealer and must obtain a license from the DOA before engaging in business in Montana.

EXCEPTIONS: The term, commodity dealer, does not apply to: 1) a person engaged in storing, shipping, or handling agricultural commodities for hire; 2) a person who buys agricultural commodities from a licensed commodity dealer or who does not purchase more than $30,000 worth of agricultural commodities from producers during a licensed year; 3) a person who is the producer of agricultural commodities that he actually plants, nurtures and harvests; or 4) a person whose trading in agricultural commodities is limited to trading in commodity futures on a recognized futures exchange.

PROCEDURES: Any person who wants to engage in the business of a commodity dealer must apply for a license to the DOA on forms provided by the department. The application must include the name of the applicant, the location of the prinicipal places of business, a sufficient and valid bond, the number and description of trucks used to transport agricultural commodities, a financial statement, and any other information requested by the department. A license is issued annually and may

be renewed by submitting all required licensing documents.

PERMIT: Feed Marketing Permit

COST: $25.00 per calendar year for each facility, distribution point, or point of invoicing. Additional fees include a $5.00 registration fee for each product other than a pet food.

LAW: MCA 80-9-201 et seq.

RULES: Administrative Rules of Montana (A.R.M.) 4-12-201 et seq.

CONTACT: Department of Agriculture (DOA), Plant Industry Division

DESCRIPTION: Byproducts manufactured for distribution or distributed as commercial feed in Montana require a permit and registration with the DOA.

EXCEPTIONS: A distributor who only distributes pet foods is exempt from this provision.

PROCEDURES: A permit may be obtained by filing a department application which includes: the requestor's name, place of business, location of manufacturing facility, and distribution point or point of invoicing. Commercial feed which will be distributed in Montana must be registered with the DOA. All commercial feeds must comply with labeling format requirements, brand and product name specifications, expression of guarantee requirements, ingredient and directions for use statements, and other requirements as defined by the laws and rules. Inspection fees and annual statements are required.

LICENSE: Warehouseman's License

COST: An annual license fee per warehouse is based on volume of grain handled in hundredweight (cwt). Fees are: 0-25,000--$25.00; 25,001-50,000--$50.00;50,001-125,000--$75.00; 125,001-250,000--$100.00; 250,001-375,000--$125.00; over 375,000--$150.00. Additional fees: each initial licensing inspection--$50.00; amendment of a license--$25.00; maintaining an employee of the department at a warehouse to supervise correction of a deficiency--$150.00 per day. A bond based on the licensed capacity of the warehouse is required for each warehouse with a minimum bond of $20,000.

LAW: MCA 80-4-501 et seq.

RULES: New rules pending 4/1/86

CONTACT: Department of Agriculture (DOA), Plant Industry Division

DESCRIPTION: Any person acting as a warehouseman and operating a public warehouse must obtain a license from the state DOA. A warehouse or public warehouse is an elevator, mill, warehouse, subterminal, grain warehouse, public warehouse, or other structure or facility in which, for compensation, agricultural commodities are received for storage, handling, processing, or shipment.

EXCEPTIONS: None

PROCEDURES: Any person who wants to operate a warehouse must apply to DOA on forms provided by the department. Upon application, a warehouseman must submit evidence of an effective insurance policy, a license fee, a current drawing showing storage facilities and capacity of the warehouse, a current financial statement, a sufficient and valid bond, and a sample warehouse receipt. In addition, each warehouse must be found suitable for the proper storage of the agricultural commodities stored therein. The DOA has detailed reporting and record keeping requirements as specified in the law.

AIR QUALITY

PERMIT: Air Pollution Permit

COST: The Department of Health and Environmental Sciences may assess a fee from the applicant to cover the reasonable costs of reviewing and acting upon the the application and to implement and enforce the terms and conditions of the air pollution permit.

LAW: Montana Clean Air Act, MCA 75-2-211, 212

RULES: A.R.M. 16.8.1101, et seq.

CONTACT: Dept. of Health and Environmental Sciences (DHES), Air Quality Bureau

DESCRIPTION: A permit is required for the construction, installation, and operation of equipment or facilities that may directly or indirectly cause or contribute to air pollution.

EXCEPTIONS: Exceptions listed in the rules include, but are not limited to, residential heating units (with some exceptions); food service establishments; any activity or equipment associated with the use of agricultural land or the planting, production, harvesting, or storage of agricultural crops (this exclusion does not apply to the processing of agricultural products by commercial businesses); ventilating systems used in buildings to house animals; road construction (except stationary

sources); and other sources which emit less than specified amounts. A complete list of exemptions is provided in A.R.M. 16.8.1102.

PROCEDURES: A propriate permit application forms must be filed not later than 180 days before construction begins on any machine, equipment, device or facility which may directly or indirectly cause or contribute to air pollution and not later than 120 days before installation, alteration or use begins. The department requires that permit applications are accompanied by plans, specifications, and any other information it considers necessary. If an application for a permit requires the compilation of an environmental impact statement (EIS), the DHES has 180 days from the receipt of the completed application to make its decision. If an agency other than the DHES is the lead agency in the preparation of the EIS, the DHES must make a decision within 30 days after the issuance of the final EIS. When the department approves or denies the application for a permit, any person who is adversely affected may request a hearing under the provisions of the Montana Administrative Procedures Act.

PERMIT: Open Burning Permit
COST: None
LAW: MCA 76-13-121 and 7-33-2205
RULES: A.R.M. 26.6.301-304, 501-503 and 16.8.1301 et seq.
CONTACT: Department of Health and Environmental Sciences (DHES), Air Quality Bureau

DESCRIPTION: Any person, agency, institution, business or industry conducting any open burning is required to have an air-quality open-burning permit. Open burning means combustion of any material directly in the open air without a receptacle or in a receptacle other than a furnace, multiple-chambered incinerator, or wood waste burner. Any major open-burning source is one which will emit more than 500 tons per calendar year of carbon monoxide or 50 tons per calendar year of any other pollutant regulated by the DHES except hydrocarbons. A minor open-burning source refers to any open burning which is not major open burning. A minor open-burning source need not obtain a permit, but must comply with all rules and regulations and special burning periods as stated in the rules. The department requires use of best available control technology (BACT) for all open burning. BACT for open burning may include but not be limited to: scheduling burning during

periods and seasons of good ventilation, applying dispersion forecasts, limiting the amount of burning during any one time period, and promoting alternative treatments and uses of materials to be burned. Materials which may not be disposed of by open burning are specified in the rules. The recognized protection agency for the area (county, state, or U.S. Forest Service) may also require a burning permit or may have special requirements or established time periods for burning.

EXCEPTIONS: Exceptions are small recreational fires, construction site heating devices used to warm workers, and safety flares used to dispose of dangerous gases at refineries, gas sweetening plants, or oil or gas wells.

PROCEDURES: Prior to major open burning, an application must be submitted on forms provided by the department. The application must contain a legal description or a detailed map of each planned site of open burning, the elevation of each planned site, the method of burning to be used and the average fuel loading or total fuel loading at each site to be burned. Permits are issued for one year. Conditional air-quality open-burning permits may be issued on a temporary basis for special categories of open burning of wood and wood byproduct trade waste and untreated wood waste at licensed landfill sites which meet specific requirements stated in the rules. Emergency open-burning permits may be issued to allow burning of a substance not otherwise approved for burning if the applicant demonstrates that the substance poses an immediate threat to public health and safety, or plant and animal life, and that no alternative method of disposal is available.

PERMIT: Prevention of Significant Deterioration (PSD) Review

COST: The DHES may assess a fee from the applicant to implement and enforce the terms and conditions of the air pollution permit.

LAW: Montana Clean Air Act, MCA 75-5-211

RULES: A.R.M 16.8.921 et seq.

CONTACT: Department of Health and Environmental Sciences (DHES), Air Quality Bureau

DESCRIPTION: When a major stationary source or major modification of a stationary source of air pollution is proposed in an area where ambient air quality is better than the applicable standards, a more stringent review procedure may apply. Such a review may include one year of preapplication

baseline data, control technology review, or air-quality impact modeling. PSD standards apply to all areas which meet ambient air quality standards. A major stationary source is any source regulated by the federal New Source Performance Standards (NEPS) or the National Emission Standards for Hazardous Air Pollutants (NESHAPS) program.

EXCEPTIONS: PSD standards do not apply in nonattainment areas.

PROCEDURES: A PSD review is conducted by DHES during the processing of all applications for air pollution permits if the department determines that the air quality in the affected area for the pollutants in question is better than applicable standards. If PSD standards apply, the department may require one year of pre-application baseline data. Best available control technology (BACT) compliance will be required for all sources that require a permit.

ALCOHOL PRODUCTION

PERMIT: Alcohol Production Permit

COST: Bonding requirements are related to plant size. Plants producing fewer than 10,000 gallons per year do not require a bond.

LAW: 26 U.S.C. 5181

RULES: 27 C.F.R. Part 201

CONTACT: U.S. Bureau of Alcohol, Tobacco and Firearms (BATF), San Francisco Office

DESCRIPTION: The BATF of the U.S. Department of the Treasury administers federal laws and regulations concerning taxation, production, and distribution of fermentation alcohol. Federal laws require that every producer of ethyl alcohol properly qualify the plant and obtain a permit before beginning operation.

EXCEPTIONS: None

PROCEDURES: Request an information packet and application forms from the San Francisco office of the BATF. The application information requested may include, but not be limited to, information on size of the plant, diagrams of the premises, description of stills, lists of feedstocks, a description of security, and statements regarding environmental impacts. Submit the completed application and bond, if applicable, to the BATF, which has 60 days to approve or respond to the application. The bonding fee must be submitted and approved before a permit may be issued. BATF has detailed

reporting requirements on production, use and distribution of alcohol. These requirements vary depending on the size of the plant. Permits have no fixed expiration date and remain in effect as long as the permit holder complies with the required laws and regulations.

PERMIT: Alcohol Distributor's License
COST: None
LAW: MCA 15-70-501 et seq.
RULES: A.R.M. 47-27-601 et seq.
CONTACT: Department of Revenue (DOR), Motor Fuels Tax Division
DESCRIPTION: Every alcohol distributor, prior to doing business in Montana, must obtain an alcohol distributors license.
EXCEPTIONS: None
PROCEDURES: Request application forms from the DOR. Upon approval of the application, the DOR issues a nonassignable license that continues in force until surrendered or canceled. After obtaining a license, a distributor is required to file monthly statements which include: the number of gallons of alcohol manufactured or imported by the distributor; the name of the gasohol dealer to whom he sold the alcohol and number of gallons sold to each dealer; and any other information required by the department. The information on these forms qualifies the distributor for a tax incentive on each gallon of alcohol produced, provided the alcohol was produced in Montana from Montana products, including Montana wood or wood products, and provided that the alcohol was blended with gasoline for sale as gasohol or was exported from Montana and was blended with gasoline for sale as gasohol. The DOR has detailed recordkeeping requirements and may request examination of any records within a three-year time period.

BUILDING, MECHANICAL, ELECTRICAL, AND PLUMBING

PERMIT: Building Permit
COST: The permit fee is based on the estimated value of all construction work for which the permit is issued, using the cost per square foot method of valuation and cost per square foot figures for the type and quality of construction.
LAW: MCA 50-60-101 et seq.

RULES: A.R.M. 8.70.101 et seq.

CONTACT: Department of Commerce (DOC), Building Codes Bureau or Local Building Department

DESCRIPTION: All construction throughout the state must comply with the state building codes and permit regulations. If towns and counties have adopted local building codes, then enforcement is by local rather than state authorities. Local authorities may adopt stricter standards than those enforced by the state, extend their jurisdiction up to 4 1/2 miles outside the city limits, or establish their own fee schedule. All areas not regulated by the local authority will be under the jurisdiction of the state.

EXCEPTIONS: Detailed lists of exceptions are outlined in the rules but they may not be applicable if the town or county has adopted local building codes. Exceptions to state rules include: residential buildings containing less than 5 dwelling units, private garages or storage structures used only by the owner, and farm and ranch buildings.

PROCEDURE: Contact either the local building department or the state DOC to determine which has jurisdiction in your area. Either agency may require detailed plans and information on a project as well as an on-site inspection prior to issuing a permit. With some exceptions, the state and local building departments have adopted the standards from the Uniform Building Code, 1985.

PERMIT: Mechanical Permit

COST: A detailed fee schedule is listed in the rules. Refer to the rules for the required fees.

LAW: MCA 50-60-101 et seq.

RULES: A.R.M. 80.70.105 et seq.

CONTACT: Department of Commerce (DOC), Building Codes Bureau or Local Building Department

DESCRIPTION: A mechanical permit is required for the design, construction, installation, quality of materials, location, operation, and maintenance of: heating, ventilating, cooling, or refrigeration systems; incinerators; and other miscellaneous heat producing appliances. The local building department may administer their own program instead of the state program.

EXCEPTIONS: Changes and additions to the Uniform Mechanical Code, 1985 are listed in the rules.

PROCEDURES: Contact either the local building department or the state DOC to determine which has jurisdiction in your area. Either agency may require detailed plans and information on a project as well as an

on-site inspection prior to issuing a permit. With some exceptions, the state and local building departments have adopted the standards from the Uniform Mechanical Codes, 1985.

PERMIT: Electrical Permit
COST: A detailed fee schedule is listed in the rules.
LAW: MCA 50-60-601 et seq.
RULES: A.R.M. 8.70.601 et seq.
CONTACT: Department of Commerce (DOC), Building Codes Bureau or Local Building Department
DESCRIPTION: An electrical permit is required for any electrical installation in any new construction or remodeling. The local building department may administer an enforcement program in lieu of the state program.
EXCEPTIONS: Electrical permits are not required for: installation, alteration, or repair of electrical signal or communications equipment owned or operated by a public utility or a city. Inspection provisions do not apply to regularly employed maintenance electricians doing work on the business premises of their employer. In addition, they do not apply to line work on the business premises of the employer or to ordinary and customary in-plant or on-site installations, modifications, or repairs.
PROCEDURES: Contact either the local building department or the state DOC to determine which has jurisdiction in your area. Either agency may require detailed plans and information on a project as well as an on-site inspection prior to issuing a permit. With some exceptions, the state and local building departments have adopted the standards from the National Electrical Code, 1984.

PERMIT: Plumbing Permit
COST: A detailed fee schedule is listed in the rules.
LAW: MCA 50-60-501 et seq.
RULES: A.R.M. 80.70.302 et seq.
CONTACT: Department of Commerce (DOC) Building Codes Bureau or Local Building Department
DESCRIPTION: A plumbing permit is required for the installation, removal, alteration, or repair of plumbing and drainage systems or parts thereof. The local building department may administer an enforcement program instead of the state program.
EXCEPTIONS: The following exceptions apply: 1) This does not apply to or affect plumbing installations in any mines, mills, smelters, refineries, public utilities, railroads, or plumbing installations on

farms having their own individual water supply or sewage disposal system. 2) No permit is required for any minor replacement or repair work, the performance of which does not have a significant potential for creating a condition hazardous to public health and safety. 3) Nothing contained in this part shall prohibit the owner of a residential property from making an installation for all sanitary plumbing and potable water supply without a permit providing he does the work himself. 4) This does not apply to regularly employed maintenance personnel doing maintenance work on the business premises of their employer unless work is subject to the permit provisions of this part.

PROCEDURES: Contact either the local building department or the state DOC to determine which has jurisdiction in your area. Either agency may require detailed plans and information on a project as well as an on-site inspection prior to issuing a permit. With some exceptions the state and local building departments have adopted the standards from the Uniform Plumbing Code, 1985.

FOREST AREAS

PERMIT: Slash Disposal/Certificate of Clearance
COST: DSL may require a bond to be posted.
LAW: MCA 76-13-401-413
RULES: A.R.M. 26.6.501-503
CONTACT: Department of State Lands (DSL), Forestry Division
DESCRIPTION: A permit is required for slash disposal, timber cutting, or timber stand improvements on private lands or right-of-way clearing by public or private utilities.
EXCEPTIONS: None
PROCEDURES: The DSL must be notified at least 10 days prior to clearing for right-of-way. The DSL requires executing fire hazard reduction agreements and posting a bond before a certificate of clearance may be issued.

PERMIT: Timber Removal Permit
COST: Minimum fees are set by the Board of Land Commissioners. Check with DSL regarding the required fees.
LAW: MCA 7-8-2608-2609, 77-5-211-213
RULES: A.R.M. 26.6.401 et seq.
CONTACT: Department of State Lands (DSL), Forestry Division or Board of County Commissioners

DESCRIPTION: Permits for removal of dead or inferior timber from state forests are required by the DSL or Board of County Commissioners for county forests. Permits may be issued on state or county forests to use dead or inferior timber for fuel or domestic purposes. Permits may also be issued to citizens of Montana for commercial purposes at commercial rates without advertising for timber on state or county forests in quantities of less than 100,000 board feet. Farmers, ranchers and prospectors may also obtain permits to purcharse timber on state forests in quantities not to exceed 25,000 board feet for domestic purposes in the repair and development of the farm, ranch, or mine.

LAND USE

PERMIT: Flood Plain Development Permit
COST: $25.00
LAW: MCA, 76-5-101-405
RULES: A.R.M., 36.15.101-903
CONTACT: Department of Natural Resources and Conservation (DNRC), Water Resources Division, Engineering Bureau or Local Government

DESCRIPTION: A permit is necessary for any inprovements, alterations, artificial obstructions or nonconforming uses in a designated flood plain or floodway. If local governments do not adopt floodplain management regulations, DNRC is required to enforce the standards adopted by the Board of Natural Resources and Conservation.

EXCEPTIONS: Open space uses that do not require structures, fill, or storage are allowable without permits. Examples include grazing, growing crops, parking and loading areas, and forestry.

PROCEDURES: Check with the local government or DNRC to determine which has jurisdiction in your prospective location. Permits will be granted or denied on the basis of whether the proposed project meets the requirements stated by the law and rules. A permit application is automatically granted 60 days after the receipt of the application, unless the applicant has been notified before the 60th day that the permit has been denied or unless he has been notified of a delay. If the proposed project is determined to have a significant impact on the environment, DNRC may require the applicant to provide information necessary for the preparation of an environmental impact statement (EIS). After the EIS process, the time required for

review of a permit application may be from 60 to 120 days.

PERMIT: Lakeshore Work Permit
COST: $10.00
LAW: MCA 75-7-201 et seq.
RULES: None
CONTACT: Local Government or Department of Natural Resources and Conservation (DNRC)
DESCRIPTION: If a local government has adopted lakeshore protection regulations, a permit is required for any work that will alter the course, current, or cross-sectional area of a navigable lake or its shore. Such activities include construction of channels and ditches; dredging of lake bottom areas to remove muck, silt, or weeds; lagooning; filling; or constructing breakwaters, wharves, or docks. Upon petition from adjacent landowners, DNRC may adopt and enforce regulations.
EXCEPTIONS: A permit is not required in areas which have not adopted local regulations, unless adjacent landowners have petitioned DNRC to adopt and enforce regulations.
PROCEDURES: Contact the local government or DNRC to see if local regulations have been adopted regarding lakeshore protection. Specific regulations and requirements may vary. Unless the applicant agrees to an extension of time, the governing body must grant or deny permission for the permit within 90 days of receiving an application. Variances may be granted, but require a public hearing and preparation of an environmental impact statement (EIS) at the expense of the applicant. A person who performs work in a lake without the necessary permit may be required to restore the lake to its previous condition.

MAJOR FACILITY SITING

PERMIT: Certificates of Public Need and Environmental Compatibility
COST: A fee schedule based on the cost of the proposed project is set forth in the law.
LAW: Major Facility Siting Act, MCA 75-20-101 et seq.
RULES: Each agency adopts its own set of rules.
CONTACT: Department of Natural Resources and Conservation (DNRC), Facility Siting Bureau and Department of Health and Environmental Sciences (DHES), Air Quality Bureau and Water Quality Bureau

DESCRIPTION: Certificates of Public Need and Environmental Compatibility may be required from the Board of Natural Resources and Conservation for major facilities that generate or transmit electricity, produce gas from coal or liquid hydrocarbon products or transmit them by pipeline, enrich uranium minerals, use or convert coal, or use geothermal resources. Associated facilities such as transportation links, aqueducts, dams, transmission substations and other facilities associated with the production or delivery of energy are included. A major facility includes any facility designed for or capable of: generating 50 megawatts of electricity or more, or any addition having an estimated cost in excess of $10 million; producing 25 million cubic feet or more per day of gas derived from coal, or any addition having an estimated cost of over $10 million; or producing 25,000 barrels of liquid hydrocarbon products per day or more, or any addition having an estimated cost of over $10 million. Federally owned or controlled facilities must satisfy the substantive criteria of the Major Facility Siting Act. Certification is also required from the DHES to ensure that the facility will not violate air or water quality standards or other laws administered by the DHES.

EXCEPTIONS: Crude oil and natural gas refineries and facilities for producing, gathering, transporting, and distributing crude oil and natural gas; those facilities subject to the Montana Strip and Underground Mine Reclamation Act; and federal facilities under the exclusive jurisdiction of the federal government are excluded.

PROCEDURES: Procedures for obtaining certificates under the Major Facility Siting Act include: listing the facility in a long-range plan for two years prior to applying for a certificate (1984 rules allow for a waiver of this time frame for good cause); and participating in a review, hearing, and appeals process as described in the rules. An applicant must file a joint application with DNRC and DHES. Statements concerning the need for the facility, location, alternate sites, baseline data, and any other information required by the departments, as well as proof of service of the application on the affected local, state, and federal agencies must be included in the filed application. The applicant must submit an original and 19 copies of the application to DNRC.

OCCUPATIONAL SAFETY AND HEALTH

LICENSE: Boiler License
COST: No charge
LAW: MCA 50-74-101 et seq.
RULES: A.R.M. 24.30.701 et seq.
CONTACT: Department of Labor and Industry (DOLI), Workers' Compensation Division, Safety Bureau
DESCRIPTION: All boilers must be licensed by the DOLI. In addition, all boilers installed and operated in Montana must follow the rules for safe construction, installation, operation, inspection, and repair of equipment as stated by the DOLI. The definitions and rules follow nationwide engineering standards as published by the American Society of Mechanical Engineers (ASME).
EXCEPTIONS: Exceptions listed in the rules are: 1) boilers under federal control, or 2) steam heating boilers operated at 15 pounds per square inch (psi) or less that are in private residences or apartments of six or fewer families, or 3) water heating or supply boilers operated at not over 50 pounds psi gauge pressure and temperatures not over 250 degrees F. when in private residences or apartments of six or fewer families, or 4) hot water supply boilers that do not exceed any of the following: heat input of 400,000 Btus per hour, water temperatures of 210 degrees F., or nominal water-containing capacity of 120 gallons. However, such hot water supply boilers still must be equipped with safety devices.
PROCEDURES: Within 10 days after purchase of any boiler, either traction or stationary, not specifically exempted by law, the purchaser must report the purchase to the DOLI. The department must also be informed as to where the boiler will be installed and operated. Regular inspections are required by the department. At the time of the first inspection, all steel boilers must be stamped with the serial number of the state of Montana.

LICENSE: Boiler Operator's License
COST: $30.00-First-Class License; $20.00-Second-Class License; $12.00-Third-Class License; $8.00-Low-Pressure License; $4.00-License Renewal.
CONTACT: Department of Labor and Industry (DOLI), Workers' Compensation Division, Safety Bureau
DESCRIPTION: Persons operating all boilers and steam engines covered by state law are required to hold the proper grade of license. To obtain a license a

person must meet qualifications for licensing as detailed in the law and pass an examination.There are four classes of engineers: first-class, second-class, third-class, and low-pressure engineers.

EXCEPTIONS: Exceptions to the minimum qualification requirement for all classes of engineers are: 1) An applicant for an engineer's license in any classification who holds a valid license in that classification from another state having license requirements equal to or exceeding the minimum requirements set out in the law, who successfully passes a written examination prescribed by the division, and is found to be competent to operate a boiler and steam driven machinery in that classification shall be granted a license in that classification. 2) Operating experience in a classification accumulated in the U.S. military services or the Merchant Marine service satisfactory to the division may be accepted in lieu of the operating experience required for licensing of engineers in each of the license classifications. 3) An applicant who has trained in the operation of steam or water boilers and steam machinery and has been certified as having satisfactorily completed a prescribed training course may be credited with a maximum of 6 months' experience toward a first-, second-, or third-class engineers license.

PROCEDURES: Each application submitted to DOLI for a boiler operator's license must be accompanied by a payment of 50% of the license fee for that application. This payment is forfeited if the applicant fails to appear for or fails to pass the examination. An applicant must pass a written examination and meet other requirements as stated in the law. Licenses must be renewed annually.

PERMIT: Fire Safety Inspections

COST: The state does not have a fee, but local fire authorities with their own enforcement programs may require a fee.

LAW: MCA 50-61-101 et seq.

RULES: A.R.M. 23.7.101 et seq.

CONTACT: Department of Justice (DOJ), State Fire Marshall or Municipal Fire Chief or County Sheriff

DESCRIPTION: Buildings designed for assembly, business, education, industrial, institutional, or residential occupancy (other than single-family private homes) must meet fire escape, fire alarm and fire extinguisher requirements. Industrial occupancy

includes, but is not limited to, mills, power plants, and processing plants. Local fire authorities may have their own enforcement program, may require a permit, or may have adopted a fee schedule.

EXCEPTIONS: None

PROCEDURES: Contact the local fire authority or the DOJ to see who has jurisdiction in your area. Either requires compliance with the Uniform Fire Code, 1985 and may require inspections. Local fire authorities may require permits or a fee. In addition, fire extinguishers must be checked and maintained at regular intervals.

WASTE MANAGEMENT

PERMIT: Hazardous Waste Management Facility Permit

COST: The fee is set on a sliding scale based on the complexity of the proposed operation.

LAW: Montana Hazardous Waste Act, MCA 75-10-401 et seq.

RULES: A.R.M. 16.14.501 et seq.

CONTACT: Department of Health and Environmental Sciences (DHES), Solid and Hazardous Waste Bureau

DESCRIPTION: A permit is necessary to construct or operate a hazardous waste management facility. A hazardous waste is a waste or combination of wastes that, because of quantity, concentration, or physical, chemical, or infectious characteristics, may contribute to an increase in mortality or an increase in serious illness or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed. Hazardous wastes include, but are not limited to: those which are toxic, radioactive, corrosive, or flammable; contain irritants or strong sensitizers; or generate pressure through decomposition, heat, or other means. A hazardous waste management facility means all contiguous land and structures, and improvements on the land used for treating, storing or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units. Special requirements for hazardous waste generated by small quantity generators can be found in the rules in A.R.M. 16.44.305.

EXCEPTIONS: A generator who accumulates hazardous waste on-site for less than 90 days is not required to obtain a hazardous waste management permit. Other exclusions are listed in A.R.M. 16.44.103. A

generator or transporter of hazardous wastes or an owner or operator of a hazardous waste management facility may apply to the Board of Health and Environmental Sciences (BHES) for a variance from any requirement in the laws or rules. The law states various conditions under which the BHES may grant a variance.

PROCEDURES: Any person wanting to construct or operate a hazardous waste management facility must apply to DHES for a permit on forms provided by the department. An application must contain, at a minimum, the name and business address of the applicant, up to four Standard Industrial Classification (SIC) codes which best reflect the principal products or services provided by the facility, the location of the proposed facility, a plan of operation and maintenance, a list of permits received or applied for, and a description of pertinent site characteristics. A permit is effective for a fixed term not to exceed 10 years, and is subject to either renewal or revocation depending on compliance with the permit's provisions. Permit conditions are established by DHES on a case-by-case basis. The department may require detailed monitoring, record keeping, and reporting as conditions of the permit. A preliminary environmental review (PER) is a part of the application review process. If indicated by the PER, an environmental impact statement may be required prior to permit issuance. Decisions may be appealed under the conditions of the Montana Administrative Procedures Act.

LICENSE: Solid Waste Management System License
COST: None
LAW: Montana Solid Waste Management Act, MCA 75-10-201 et seq.
RULES: A.R.M. 16.14.501 et seq.
CONTACT: Department of Health and Environmental Sciences (DHES), Solid Waste Management Bureau
DESCRIPTION: The DHES requires a license for the disposal of solid waste and for the operation of a solid waste disposal facility.
EXCEPTIONS: If a person owns or leases more than five acres of land, he may dispose of his own nonhazardous waste on his own land as long as it does not create a nuisance or a public health hazard.
PROCEDURES: Any person who wants to establish and operate a solid waste management system must apply to DHES for a permit on forms provided by the department. An application must contain, at a minimum, the

name and business address of the applicant, the location of the proposed facility, a plan of operation and maintenance, and a description of pertinent site characteristics. If additional information is needed, the DHES will inform the applicant and postpone processing the application. If the requested additional information is not received within 90 days after the applicant has been notified, a new application must be submitted. Within 15 days after receipt of the completed application, the DHES must notify the local health officer in the county where the proposed system will be located. After DHES issues a proposed decision, the department must comply with publication notification regulations as stated in the rules. In addition, the department conducts a preliminary environmental review (PER). After a 30-day public comment period, the DHES must make a final decision on the license. An appeals process is described in the rules.

WATER QUALITY

PERMIT: Montana Groundwater Pollution Control System (MGWPCS) Permit

COST: None

LAW: Montana Water Quality Act, MCA 75-5-101 et seq.

RULES: A.R.M. 16.20.1001 et seq.

CONTACT: Department of Health and Environmental Sciences (DHES), Water Quality Bureau

DESCRIPTION: Any person who wants to discharge pollutants into state groundwaters must obtain an MGWPCS permit. Groundwater classifications are established to protect water resources for beneficial uses. The DHES has a nondegradation policy for any groundwater whose existing quality is higher than established groundwater quality standards for its classification. That groundwater must be maintained at that high quality unless it has been positively demonstrated that a change is justifiable as a result of necessary economic or social development, and will not preclude present or anticipated uses of such waters.

EXCEPTIONS: Exclusions listed in the rules include, but are not limited to, solid waste management systems and hazardous waste management systems licensed by DHES, discharges or activities regulated under the federal underground injection control (UIC) program, persons disposing of their own household

waste on their own property, and agricultural irrigation projects.

PROCEDURES: An application for an MGWPCS Permit must be filed at least 180 days prior to beginning operation. All applications must be submitted on forms which are obtained from the department and must contain a site plan, location of treatment works and disposal system, list of people who own or lease adjacent land, location of adjacent state surface waters, location of water supply wells and springs within one mile, description of waste or process solutions, information on existing groundwater quality, and any additional information the department may require. The department will determine if the application is complete within 30 days. Upon receipt of a completed application, the DHES must make a tentative determination with respect to issuance or denial of a permit. The DHES is then required to issue a public notice regarding the proposed discharge and the tentative determination. At least 30 days must be provided for a public comment period. The applicant, any affected agency, the regional administrator of the Environmental Protection Agency (EPA), or any interested person may submit a written request for a hearing. A hearing will be held if the department determines good cause or sufficient interest exists to hold a hearing. The department will provide a 30-day public notice of the hearing. If a hearing is not held, the department must make a final determination within 30 days. If a public hearing is held, the DHES must make a decision within 60 days following the hearing. The conditions of the permit will include proposed discharge limitations and conditions; monitoring and reporting requirements, if any; necessary schedules of compliance, including interim dates and requirements for meeting proposed discharge limitations; or other special conditions. A permittee must request reissuance of his permit at least 90 days prior to its date of expiration. Operators who have submitted permit applications for groundwater discharge sources under the MPDES permit program will be deemed to have complied with the application requirements for this permit.

PERMIT: Montana Pollutant Discharge Elimination System (MPDES) Permit

COST: None

LAW: Montana Water Quality Act, MCA 75-5-101 et seq.

RULES: A.R.M. 16.20.901 et seq.

CONTACT: Department of Health and Environmental Sciences (DHES), Water Quality Bureau

DESCRIPTION: A permit from DHES is required to construct, modify, or operate a disposal system or to construct or use any outlet for discharge of sewage, industrial wastes, or other wastes into state surface waters. The MPDES permit regulates the discharges of pollutants from point sources into state waters. A point source can be any discernible conveyance from which pollutants are discharged, such as a pipe, a ditch, or a floating craft. An animal confinement facility may also be a point source. All discharges of pollutants into state waters authorized by an MPDES permit must be consistent with the conditions of the permit. If there is a violation of the permit, the DHES may modify, suspend, or revoke the permit. The DHES has a nondegradation policy which requires that any state water whose quality is higher than the established water quality standards be maintained at that high quality. Permits may require effluent limitations or other conditions on industrial, public, or private projects or development that constitute a new or an increased source of pollution to high-quality waters.

EXCEPTIONS: Federal permitting authority is involved for activities on Indian reservations. For more information see National Pollutant Discharge Elimination System (NPDES) permit in this section.

PROCEDURES: The application for an MPDES permit must be filed no less than 180 days prior to the operation of a point source. Application information required by DHES includes but is not limited to plans and specifications, site descriptions, process and waste flow diagrams, and volume and nature of projected discharges. Upon receipt of a completed application, the DHES must make a tentative determination with respect to issuance or denial of a permit. The DHES is then required to issue public notice and allow 30 days for public comment. If DHES denies the discharge permit, a hearing may be requested. All permits are issued for a fixed term not to exceed 5 years.

PERMIT: National Pollutant Discharge Elimination System (NPDES) Permit

COST: None

LAW: Water Pollution Control Act, 33 U.S.C. 1251 et seq.

RULES: 40 C.F.R. 122 et seq.

CONTACT: U.S. Environmental Protection Agency (EPA)

DESCRIPTION: Anyone who wants to discharge wastewater on Indian reservations must obtain an NPDES permit and comply with minimum discharge limits established by the EPA. A permit is also required to modify or expand a project.

EXCEPTIONS: Activities in incorporated municipalities on Indian reservations are excluded.

PROCEDURES: Any person who wants to discharge wastewater on an Indian reservation must apply to the EPA on forms provided by that agency. After a completed application has been received, EPA drafts either the permit or the denial, and publishes the notice of intent to issue or deny. There is a 30-day comment period and then the agency must issue a denial or approval. EPA may include effluent limitations and monitoring and reporting requirements as conditions of the permit. A permit is issued for a fixed term up to five years. The applicant must apply for renewal of the permit 180 days before its expiration date.

PERMIT: Stream Protection Permit
COST: None
LAW: MCA 87-5-501
RULES: None
CONTACT: Department of Fish, Wildlife and Parks (DFWP), Fisheries Division
DESCRIPTION: A state or local government agency must obtain a permit before engaging in any project which may obstruct or alter a stream.
EXCEPTIONS: None
PROCEDURES: Within 30 days after receipt of project plans, the DFWP must notify the applicant whether the project will adversely affect fish or wildlife habitat. The DFWP may require modifications in the project. If agreement cannot be reached, an arbitration panel may be appointed by the district court.

PERMIT: Streambed and Land Preservation Permit (310 Permit)
COST: None
LAW: Natural Streambed and Land Preservation Act, MCA 75-7-101 et seq.
RULES: A.R.M. 36-2-401 et seq.
CONTACT: Conservation District Supervisors
DESCRIPTION: Any private person or organization must obtain a permit before installing a structure or beginning any activity on private or public lands within the high-water marks of a perennial flowing stream. Any physical alteration of a natural perennial

flowing stream requires approval from the conservation district board of supervisors.

EXCEPTIONS: None

PROCEDURES: Any person planning to engage in a project must present a written notice of the project including location, description, and preliminary plans to the supervisors of the local conservation district. Within 5 days of receiving a notice of a proposed project, the district supervisors must determine whether the project is covered by this act. They must send a copy of their determination to the Department of Fish, Wildlife, and Parks (DFWP) and to the applicant. The DFWP may, within 5 days, request an inspection, then has 20 days to call a team together and 50 days for the team to make a recommendation. The supervisors or commissioners must review the recommendation and make a decision on the proposed project within 60 days. The supervisors may extend the time limits up to one year where deemed necessary. If an agreement cannot be reached, an arbitration panel may be appointed by the district court. Detailed procedures for times of emergency are listed in the rules.

WATER USE

PERMIT: Beneficial Water Use Permit

COST: A sliding-scale fee schedule based on volume of water is listed in the rules. Refer to the rules for required fees.

LAW: Montana Water Use Act, MCA 85-2-101 et seq.

RULES: A.R.M. 36.12.101 et seq. and 36.16.101 et seq.

CONTACT: Department of Natural Resources and Conservation (DNRC), Water Rights Bureau

DESCRIPTION: A Beneficial Water Use Permit is required to appropriate either ground water which is over 100 gallons per minute or surface water. This permit is required for beneficial uses which benefit the appropriator, other persons, or the public. Examples of beneficial uses are agriculture, including stockwater; domestic; fish and wildlife; industrial; irrigation; mining; municipal; power; and recreational uses. A person who intends to appropriate water for a reservoir also needs a permit. (See Exceptions.) In order to protect all water rights, prior approval is required from DNRC for significant changes in water use of any existing water right, permit, or certificate.

Such changes might include change of use or location of use, diversion, or storage.

EXCEPTIONS: The following exceptions apply: 1) A permit is not required prior to construction for a reservoir or pit to be used for watering livestock if the pit or reservoir meets certain conditions. If the pit or reservoir will access a non-perennial stream, hold less than 15 acre feet of water, and be located on a piece of land larger than 40 acres, construction can begin immediately. Within 60 days of completion, an application for a Stockwater Provisional Permit must be submitted to DNRC. A provisional permit subject to prior water rights will be issued. If the reservoir has adverse effects on prior rights, DNRC can require modifications to the reservoir or revoke the permit. 2) Outside of a controlled groundwater area, a permit is not required to appropriate water by means of a well or developed spring with a maximum appropriation of less than 100 gallons per minute. Within 60 days after a well is completed the driller must file with DNRC a log report on a form provided by the department. Within 60 days after the water has been put to beneficial use the well owner must file a notice of completion of groundwater development with DNRC.

PROCEDURES: Any person who wants to appropriate ground or surface water by commencing construction of a diversion, impoundment, withdrawal, or distribution works must apply for a permit on forms provided by DNRC. Upon receipt of a completed application, the department is required to publish public notices pertinent to that application. The department must grant, deny, or condition an application for a permit in whole or in part within 120 days after the last date of publication of notice of application if no objections have been received or within 180 days if a hearing is held or objections have been received. DNRC may issue a permit subject to any terms, conditions, restrictions, and limitations it considers necessary to protect the rights of other appropriators. For more information, consult any of DNRC's field offices in Billings, Bozeman, Kalispell, Lewistown, Helena, Havre, Glasgow, Missoula, and Miles City. Address for these offices are included in Section 4, "Water Use" on pages 81-82.

SECTION 4: SPECIAL AREAS

BUSINESS LICENSING REQUIREMENTS

A biomass energy project must comply with a wide variety of laws and rules and must obtain a number of permits and licenses to do business in Montana. A business must file with the Secretary of State for any of the following which are applicable to the business: a certificate of partnership, articles of incorporation, registration of an assumed business name, or registration of a trademark. Other business responsibilities may include obtaining a local business license, obtaining a federal tax identification number, registering with the state Department of Revenue as an employer for income tax purposes, filing a state witholding tax registration, registering for unemployment insurance, or obtaining worker's compensation insurance.

The Business Licensing Center of the Department of Commerce has a toll free number which is included in Appendix B on page 96. The center also produces the free publication, the Montana Business Licensing Handbook which offers a brief summary of many of the business licenses and permits required by the state.

COGENERATION AND SMALL POWER PRODUCTION

A cogeneration or small power production facility must be certified as a qualifying facility (QF) to operate in Montana. A QF must meet certain requirements as stated in the Montana law, MCA, 69-3-601. Those requirements state that the facility must:

1) produce electricity by the use, as a primary energy source, of biomass, waste, water, wind, or other renewable resource or any combination of those sources; or
2) produce electricity and useful forms of thermal energy, such as heat or steam, used for industrial, commercial, heating, or cooling purposes through the sequential use of energy known as cogeneration; and
3) have a power production capacity that together with any other facilities located at the same site is not greater than 80 megawatts; and
4) be owned by a person not primarily engaged in the generation or sale of electricity other than electric power from a small power production facility.

The Federal Energy Regulatory Commission (FERC) controls the certification process for a QF. There are two ways to obtain certification. The first alternative is self-qualification and is accomplished by notifying FERC of the existence of the facility and supplying them with other information required by the agency. While this method has less paperwork and takes less time, the disadvantage is that the certification may be challenged. Later delays and economic problems can occur because of this.

The second alternative is to apply to FERC for certification. Detailed information on the facility as well as a filing fee of $1800 must accompany the application.

For more information on the certification processes, call or write to the Washington, D.C. office of the Federal Energy Regulatory Commission at the address listed in Appendix C, page 100.

Facilities that are connecting to a utility can get interface guidelines from that utility. In addition, facilities must comply with state electrical standards, apply for an electrical permit, and be inspected by state inspectors prior to initiating service.

The Montana Public Service Commission (PSC) determines rates and conditions of those rates for contracts between cogenerators and small power producers and the following utilities: Montana-Dakota Utilities Co., Montana Light and Power, Montana Power Co., and Pacific Power and Light Co. Various types of contract agreements can be negotiated with these utilities. For more information, contact the appropriate utility:

Warren Satterlee, Energy Utilization Manager
Montana-Dakota Utilities Co.
400 North Fourth St.
Bismark, N.D. 58501 701-222-7900

Emmett Lisle, Operations Manager
Montana Light and Power*
P.O. Box VX
Libby, MT 59923 293-4141
*Wholly owned subsidiary of Champion

Robert Stuart, Director of Power Contracts
Montana Power Co.
40 East Broadway
Butte, MT 59701 723-5421

Michael Andriolo, Area Engineer
Pacific Power & Light Co.
448 Main St.
Kalispell, MT 59901 755-7461

Utilities owned or controlled by a municipality or town or by a county or city-county water or sewer district are excluded from PSC jurisdiction. Rates and services for such systems are determined by the local governing body or district.

Facilities located in a district served by a private company or an electric cooperative negotiate rates and contracts directly with that cooperative. The following are cooperatives that serve Montana:

Beartooth Electric Cooperative, Inc.
P.O. Box 1119
Red Lodge, MT 59068 446-2310

Big Flat Electric Cooperative, Inc.
P.O. Box H
Malta, MT 59538 654-2040

Big Horn County Electric Cooperative, Inc.
P.O. Box AE
Lodge Grass, MT 59050 639-2341

Central Montana Electric G & T Cooperative
705 Lincoln Lane
Billings, MT 59101 248-7936

Fergus Electric Cooperative, Inc.
313 West Janeaux Street
Box 58
Lewistown, MT 59457 538-3465

Flathead Electric Cooperative, Inc.
510 LaSalle Road
Kalipell, MT 59901 755-5483

Glacier Electric Cooperative, Inc.
P.O. Box 358
410 East Main Street
Cut Bank, MT 59427 873-5566

Goldenwest Electric Cooperative, Inc.
P.O. Box 245
Wibaux, MT 59353 795-2423

Hill County Electric Cooperative, Inc.
Highway 2 West
P.O. Box 430
Havre, MT 59501 265-2511

Lincoln Electric Cooperative Inc.
P.O. Box 628
Eureka, MT 59917 296-2511

Lower Yellowstone Electric Association
310 Second Avenue, N.E.
Sidney, MT 59270 482-1602

Marias River Electric Cooperative, Inc.
910 Roosevelt Highway
Shelby, MT 59474 434-5575

McCone Electric Co-op, Inc.
P.O. Box 386
Circle, MT 59215 485-3430

Mid-Yellowstone Electric Cooperative, Inc.
P.O. Box 386
Hysham, MT 59038 342-5521

Missoula Electric Cooperative, Inc.
1950 Sherwood Street
Missoula, MT 59801 549-6115

Northern Electric Cooperative, Inc.
P.O. Box 287
Opheim, MT 59250 762-3352

Park Electric Coopertaive, Inc.
P.O. Box 908
Livingston, MT 59047 222-3100

Ravalli County Electric Co-Op, Inc.
P.O. Box 109
Corvallis, MT 59828 961-3211

Sheridan Electric Cooperative, Inc.
P.O. Box 227
Medicine Lake, MT 59247 789-2231

Southeast Electric Cooperative, Inc.
P.O. Box 368
Ekalaka, MT 59324 775-8762

Sun River Electric Cooperative, Inc.
P.O. Box 217
Fairfield, MT 59436 467-2526

Tongue River Electric Cooperative, Inc.
P.O. Box 138
Ashland, MT 59003 784-2341

Upper Missouri G & T Electric Co-Op, Inc.
P.O. Box 1069
Sidney, MT 59270 482-4100

Valley Electric Cooperative, Inc.
P.O. Box 392
Glasgow, MT 59230 367-5315

Vigilante Electric Cooperative, Inc.
225 E. Bannack Street
P.O. Box 71
Dillon, MT 59725 683-2327

Yellowstone Valley Electric Co-Op, Inc.
Huntley, MT 59037 348-3411

FEDERAL SYSTEMS

U.S. Bureau of Indian Affairs
Department of the Interior
(Flathead Irrigation Project-Power Division)
Polson, MT 59860 883-5361

Water & Power Resources Service
Department of the Interior
Regional Office
P.O. Box 2253
Billings, MT 59103

DAM SAFETY

The Dam Safety Act (MCA 85-15-101-502), effective October 1, 1985, requires construction and operating permits for high-hazard dams. A high-hazard dam is a dam of 50 acre-feet or more, the failure of which would be likely to cause a loss of life.

The Department of Natural Resources and Conservation (DNRC), Water Resources Division, administers this program and is in the process of drafting administrative rules. The department will issue permits; establish safety standards for the design, construction, operation, and maintenance of high-hazard dams; conduct periodic inspections; and establish fees commensurate with costs to cover inspections under this chapter.

FOREST AREAS

Requirements regarding harvesting of timber and removal of slash and wood waste for commercial uses vary depending on land ownership. The Boards of County Commissioners; the Department of State Lands (DSL), Forestry Division; the United States Department of Agriculture, Forest Service (USFS); and the United States Department of Interior, Bureau of Land Management (BLM) all administer forest lands in Montana.

A permit is required from DSL for slash disposal, timber cutting, or timber stand improvements on private lands, state lands, or right-of-way clearing by public or private utilities. Permits may be issued to county residents to use dead or inferior timber for fuel or domestic purposes. Farmers, ranchers, and prospectors may also obtain permits for timber removal on state forest land in quantities not to exceed 25,000 board feet for domestic purposes in the repair and development of the farm or ranch. Permits may be issued to Montana citizens for commercial purposes at commercial rates without advertising for timber in

state forests in quantities of less than 100,000 board feet or in emergency cases due to fire, insects, or blowdown. (See Forest Areas, pages 56-57.) For more information contact the DSL or any of its field offices at the addresses listed in Section 5, "Biomass Resources", pages 87-88.

Timber sales on federal lands administered by the BLM and the USFS are advertised for competitive bids. The BLM may negotiate individually with purchasers for small amounts of timber in special instances. For more information contact each National Forest or each office of the BLM at the addresses listed in Section 5, "Biomass Resources", pages 88-89.

HIGHWAYS/TRANSPORTATION

The Department of Highways (DOH) regulates various aspects of transportation and activities adjacent to highways. Permits are required for special fuels; restricted routes or loads; temporary trips; over-sized vehicles; outdoor advertising; highway right-of-way, encroachments, and approaches; and utility mains.

The DOH, Gross Vehicle Weight Division generally regulates travel by trucks, truck-tractors, buses, and equipment. Permits handled by the department include, but are not limited to: temporary trip permit; temporary special fuel license; overwidth, overheight and/or overlength permit; gross vehicle weight fees receipt; liquified petroleum gas license; restricted route-load permit; and proportional license (apportionment).

A permit is required for outdoor advertising visible from interstate and primary highways. Applications for permits may be obtained at any of the DOH District Offices. (See Appendix B, page 97.)

Permits are required from the DOH, Maintenance Bureau for approaches, which include construction of driveways and other approaches intersecting public streets and highways, and encroachments, which include all private structures, devices, and facilities placed upon, over, or under the right-of-way. Encroachments include ditches, dikes, flumes, canals, or bridges; and water sewer, electric, natural gas, and communications lines.

Permits to construct utility mains and lines along state highway rights-of-way are granted by the DOH, Maintenance Bureau. City councils and boards of county commissioners grant similar approval along city streets and county roads respectively.

INDIAN RESERVATIONS

The seven Indian reservations in Montana, with the exception of incorporated municipalities located on these reservations, fall under the jurisdiction of the Environmental Protection

Agency (EPA) in regards to air quality, water quality, and hazardous waste management.

Three reservations-the Northern Cheyenne Reservation, the Flathead Indian Reservation, and the Fort Peck Indian Reservation-are designated as Class I for air quality purposes. All other reservations are designated Class II. EPA has oversight authority on all air quality programs in-state, but the air pollution permits are actually issued by the Department of Health and Environmental Sciences, Air Quality Bureau. (See Air Quality, pages 32-39 and 49-52.) Because some projects affect areas in or adjacent to reservation lands, EPA is sometimes asked to enter into cooperative management programs. These programs often involve cooperation between the EPA, the state, the tribe, and the Bureau of Indian Affairs (BIA). Some projects may require the cooperation of all these agencies.

EPA also administers progams to control water pollution and provide safe drinking water. The National Pollutant Discharge Elimination System (NPDES) permit protects surface waters and groundwaters from pollution and controls the treatment and discharge of municipal and industrial wastewater. (See NPDES Permit, page 66; Waste Management, pages 62-64.) Minimum discharge limits are established by the EPA, and apply to all discharges except where more intensive treatment is needed to meet water quality stream standards. EPA administers an ongoing monitoring program to assure that drinking water systems on Indian reservations are free from pollutants. They also administer an underground injection control (UIC) program to control injection of fluids that might contaminate drinking water supply sources.

EPA has the statutory authority to regulate hazardous wastes on Indian reservations. Generators of hazardous wastes must comply with detailed record keeping and reporting requirements. (See Waste Management: Hazardous Wastes, page 40-42 and 62-63.)

Information on all of the EPA's programs can be obtained from the Helena office of the EPA. (See Appendix C, page 100.)

The six agencies in Montana and their corresponding tribes are as follows:

Blackfeet Agency
Browning, MT 59417 338-7544
(Blackfeet Tribe)

Crow Agency
Crow Agency, MT 59022 638-2671
(Crow Tribe)

Flathead Indian Reservation
P.O. Box 278
Pablo, MT 59855 675-2700
(Confederated Salish & Kootenai Tribes)

Fort Belknap Agency
P.O. Box 98
Harlem, MT 59526 353-2205
(Gros Ventre and Assiniboine Tribes)

Fort Peck Agency
P.O. Box 637
Poplar, MT 59255 768-5211
(Assiniboine & Sioux Tribes)

Northern Cheyenne Agency
Lame Deer, MT 59043 477-6242
(Northern Cheyenne Tribe)

Rocky Boy Agency
Box Elder, MT 59521 395-4476
(Chippewa Cree Tribe)

LOCAL AREAS

There are many local laws and regulations that may affect a biomass energy project. The regulating authority may be a local agency, the board of county commissioners, or the city or local government. Local governments often have jurisdiction over building and construction, land use, utilities, roads, and some environmental concerns such as air quality.

Local building departments may assume jurisdiction over the building, mechanical, plumbing, or electrical permits required for construction projects. If a local building department administers their own program, they may also add to the standards enforced by the state Department of Commerce, extend their jurisdiction up to four and one-half miles outside the city limits, or establish their own fee schedule. (See Building, Mechanical, Electrical, and Plumbing, pages 53-56.)

Local fire authorities may also have their own enforcement program, may require a permit, or may have adopted a fee schedule. Fire safety inspections may be conducted locally by the municipal fire chief or the county sheriff. (See Fire Safety Inspections, page 61.)

Local authorities often administer land-use regulations and restrictions which may affect location of a biomass energy project. Choosing a site for a plant may be restricted by zoning regulations, floodplain or wetland restrictions, or lakeshore preservation requirements. The local planning board or board of county commissioners can provide more information on land-use regulations.

Supplying electric power, natural gas, and water to a site is usually regulated on a local level. The city or town council or board of county commissioners must grant permission for construction of gas, water, sewer, and other mains within the

city limits and for construction of utility mains and lines along city streets and county roads. City or town councils may permit extension of utility lines outside city limits.

Written permission is required from the board of county commissioners for any excavation, construction, or other encroachments across county roads. Highway encroachments include all private structures, devices, and facilities placed upon, over, or under right-of-way. These include ditches, dikes, flumes, canals, or bridges, and water, sewer, electric, natural gas, and communications lines.

If it is necessary to connect to the local sewage treatment facility, they must be informed of the quantity and type of sewage an applicant plans to discharge to make certain it does not overload the current treatment capacity.

A municipality or county may establish a local air pollution control progrm. (See Urban Areas/Municipalities, page 79-80.)

On county lands a burning permit may be required to ignite an open fire directly in the open air without a receptacle or in a receptacle other than a furnace, multiple-chambered incinerator, or wood waste burner. (See Open Burning Permit, page 50.)

NAVIGABLE WATERS

The Department of State Lands (DSL), Lands Division, has jurisdiction over rivers, lakes, and streams designated as navigable waters in Montana and maintains a current list of navigable waters in state. When there will be activity on a river, lake, or stream from low-water mark to low-water mark, consult DSL for permitting and other requirements.

OCCUPATIONAL SAFETY AND HEALTH

All biomass energy projects must comply with occupational safety and health laws and rules. The administering agency will be either the federal Occupational Safety and Health Administration (OSHA) or the state Department of Labor and Industry (DOLI), Workers' Compensation Division, depending on whether the project is considered a public or a private project. A public project involves services performed for the state, city, or county governments and involves public employees. Whenever public employees or employers are involved in a project, the enforcement will be by DOLI, Division of Workers Compensation. All other employees and employers are under the jurisdiction of OSHA.

All public biomass energy projects are required to comply with the Montana Safety Act, MCA 50-71-101 et seq. There are no licenses or permits involved; however, there are a variety of rules which require compliance.

For all private biomass energy projects under the jurisdiction of OSHA that have one or more employees and for all federal employees, Montana laws and rules are superceded by federal laws and rules. In the Code of Federal Regulations, the construction industry standards apply to the building phase of a project, and the general industry standards apply to the operational phase of a project. OSHA does not require a license or permit, but does require compliance with all the federal rules.

OSHA has general scheduled on-site health and safety inspections for businesses classed as high hazard. If, during an inspection, problems are found, the owner or contractor can be issued a citation or fined. OSHA also investigates any complaints, fatalities, or catastrophes. Businesses with eleven or more employees must comply with record-keeping and posting requirements, which include posting an informational poster and filing an OSHA form with a log and summary on all occupational illnesses and accidents. More information on OSHA standards can be obtained from the OSHA office in Billings, which has a toll free number. (See Appendix C, page 100.)

The DOLI has a Safety Consultation Program conducted by the Safety Bureau which is a voluntary consultation program for businesses. The program provides free occupational safety and health consultations on request. The program requires a prior agreement that if serious occupational safety and health violations are noted, they will be corrected within a resonable amount of time. There are no fines or citations for violations. For more information contact the DOLI, Workers' Compensation Division, Safety Bureau. (See Appendix B, page 98.)

The Department of Health and Environmental Sciences (DHES), Occupational Health Bureau has the authority to regulate occupational noise and indoor emissions in workplaces that are under the jurisdiction of state and local governments. DHES does not require or issue permits, but has established standards in these two areas. In the A.R.M. 16.42.101, DHES establishes maximum noise exposure levels that represent conditions that nearly all workers may be repeatedly exposed to without adverse effect on the ability to hear and understand normal speech. In the A.R.M. the DHES establishes maximum threshold limit values for air contaminants that nearly all workers may be exposed to day after day without adverse effects.

For information on boiler and boiler operator licenses and fire safety inspections, see Occupational Safety and Health, pages 60-62.

URBAN AREAS/MUNICIPALITIES

A municipality or county may establish a local air pollution control program if it is consistent with the state program and is approved by the Board of Health and Environmental Sciences. After approval, the municipality or county may administer the air

pollution control program in its jurisdiction. A complete explanation of the requirements and restrictions involving local programs can be found in Montana law, MCA 75-2-301.

The law allows a local program to establish more stringent or more extensive requirements that the state requires. For instance, Great Falls has stricter permits required for open burning because of the strong prevailing winds in that area. Nonattainment areas for certain pollutants may have more stringent requirements for scrubbers and air pollution controls on plants.

Missoula has adopted rules which regulate and control the emissions from residential solid fuel burning devices, which include: any fireplace, fireplace insert, wood stove, woodburning heater, wood stick boiler, coal-fired furnace, or coal stove. The rules cover devices installed in a private residence or commercial establishment which burns less than 1,000,000 Btus per hour. The rules regulate new installations, visible emissions during air pollution alerts, fuels, and special permits.

Helena is in the process of establishing a similar regulatory program. An addition in the Helena program is the restriction of new coal-burning devices in certain areas after October 1, 1985.

Cities and towns in Montana are classified according to the National Ambient Air Quality Standards (NAAQS). Nonattainment areas are those which exceed allowable limits for certain air pollutants. Biomass energy projects locating in nonattainment areas may need to meet stricter requirements regarding emission rates depending on the particular problem pollutants and the current monitoring levels of those pollutants. (See Air Quality, pages 33-39 and 49-52.)

WATER USE

Any person who wants to appropriate surface or ground water must apply to the Department of Natural Resources and Conservation (DNRC), Water Rights Bureau for a Beneficial Water Use permit. Beneficial uses include: agricultural, domestic, fish and wildlife, industrial, irrigation, mining, municipal, power generation, and recreational uses. (See Water Use, pages 68-69.)

Water rights in Montana are in the process of being reviewed by the courts. Every person, including but not limited to an individual, partnership, association, public or private corporation, city or municipality, county, state agency, or state of Montana, and federal agency of the United States of America, on its own behalf or as a trustee for an Indian or Indian tribe asserting a claim for an existing use of water, must file for a certificate of water rights. For more information on water rights, contact any of the DNRC, Water Rights Bureau Field Offices listed below:

Montana Water Rights Bureau Area Field Offices

Havre
1708 West Second Street
P.O. Box 1828
Havre, MT 265-5516
Serving: Blaine, Chouteau, Glacier, Hill, Liberty, Pondera, Teton, and Toole counties

Missoula
2101 Bow Street
P.O. Box 5004
Missoula, MT 59806 721-4284
Serving: Missoula, Granite, Ravalli, and Mineral counties

Glasgow
110 Fifth Street South, Room 106
P.O. Box 894
Glasgow, MT 59230 228-2561
Serving: Daniels, Dawson, Garfield, McCone, Phillips, Richland, Roosevelt, SHeridan, and Valley counties.

Helena
1520 East Sixth Avenue
Helena, MT 59620 444-6695
Serving: Deer Lodge, Powell, Lewis and Clark, Broadwater, Silver Bow, Jefferson, and Beaverhead counties

Bozeman
1201 East Main Street
Bozeman, MT 59715 586-3136
Serving: Gallatin, Park, and Madison counties

Billings
1537 Avenue D, Suite 105
Billings, MT 59102 657-2105
Serving: Big Horn, Carbon, Stillwater, Treasure, Yellowstone, and Sweet Grass counties

Kalispell
3220 Highway 93 South
P.O. Box 860
Kalispell, MT 59903-0860 752-2288
Serving: Flathead, Lake, Lincoln, and Sanders counties

Lewistown
613 Northeast Main Street
P.O. Box 438
Lewistown, MT 59457 538-7459
Serving: Cascade, Fergus, Golden Valley, Judith Basin, Meagher, Musselshell, Petroleum, and Wheatland counties

Miles City
5 North Prairie
P.O. Box 276
Miles City, MT 59301 232-6359
Serving: Carter, Custer, Fallon, Powder River, Prairie, Rosebud, and Wibaux counties

SECTION 5: BIOMASS RESOURCES

BIOMASS RESOURCE AVAILABILITY

Many state and federal agencies compile information on biomass resources in Montana. The Department of State Lands, Forestry Division in Missoula has divided the state into geographic areas called "working circles." It surveys the timber resources in each circle. The information collected is compiled and published in five timber resources publications, which are cited in the biomass resources section of the bibliography of this report. These publications cover all lands in Montana, regardless of ownership. More information about lands under federal ownership can be obtained from district offices of the Bureau of Land Management (BLM) or from any one of the ten national forests under the jurisdiction of the United States Forest Service (USFS) in Montana. Addresses for the BLM and USFS offices are included in this section on pages 88-89. The Bureau of Business and Economic Research of the University of Montana in Missoula and the Intermountain Forest and Range Experiment Station in Ogden, Utah have informative publications in the area of timber resources and addresses for both are included in this section on pages 89 and 90. The Montana Crop and Livestock Reporting Service (MCLRS) is a joint federal and state agency supported by the U.S. Department of Agriculture (USDA) and the Montana Department of Agriculture (DOA). It is the primary source for statistical information on farming and ranching operations in Montana. A secondary source of information is the DOA. Publications by MCLRS and USDA are listed in the bibiography.

Wood Resources

There are approximately 800 loggers in Montana; many of them can be considered commercial biomass suppliers. One hundred fifty of those loggers are listed in the 1985 edition of the Directory of Montana's Forest Industry Contractors, which is publisher biannually. A second 1985 directory, also published biannually, the Directory of Montana's Forest Products Industry, lists businesses in the forest products area. The first directory would be helpful in locating loggers who might supply timber and the second might be helpful in locating sawmills or other operations that might market wood wastes. Both directories are listed in the bibliography.

There are several facilities that burn wood pellets in wood-fired furnaces or boilers. All three pellet plants listed in the directory of biomass energy projects in Appendix A, page 91, supply dealers around the state and market directly to larger customers.

Agricultural Resources

Grains or other agricultural crops can be purchased from a grower or from a grain elevator. Agricultural industry or crop residues are often available directly from the farmer, rancher, or the industry involved.

Tables 11 and 12 are guides to agencies that have information on biomass technology. Table 13 lists agencies and others who could help a developer find specific biomass materials.

TABLE 11: INFORMATION SOURCES ON CURRENT TECHNOLOGIES

AGENCIES	ALCOHOL FERMENTATION	ANAEROBIC DIGESTION	COGEN-ERATION	DENSIFI-CATION	DIRECT COMBUSTION
MT CLRS	X	X			
MT DOA	X	X			
MT DHES, WQB		X			
MT DHES, SWM		X			
MT DSL	X		X	X	X
US BLM	X		X	X	X
USFS	X		X	X	X

TABLE 12: INFORMATION SOURCES ON DEVELOPING TECHNOLOGIES

AGENCIES	GASIFI-CATION	LANDFILL GAS	LIQUE-FACTION	OILSEED EXTRACTION	PYROLYSIS
MT CLRS				X	
MT DOA				X	
MT DHES, WQB					
MT DHES, SWM		X			
MT DSL	X		X		X
US BLM	X		X		X
USFS	X		X		X

MT CLRS -MONTANA CROP AND LIVESTOCK REPORTING SERVICE
MT DOA -MONTANA DEPT. OF AGRICULTURE
MT DHES, WQB-MONTANA DEPT. OF HEALTH AND ENVIRONMENTAL SCIENCES, WATER QUALITY BUREAU
MT DHES, SWM-MONTANA DEPT. OF HEALTH AND ENVIRONMENTAL SCIENCES, SOLID WASTE MANAGEMENT BUREAU
MT DSL -MONTANA DEPT. OF STATE LANDS
US BLM -U.S. BUREAU OF LAND MANAGEMENT
USFS -U.S. FOREST SERVICE

TABLE 13: INFORMATION SOURCES ON BIOMASS AVAILABILITY

RESOURCES	CONTACTS
WOOD PRODUCTS TREES (WOOD, CELLULOSE) FOREST RESIDUE FOREST INDUSTRY WASTE WOOD PELLETS	MT DSL US BLM USFS SAWMILLS
AGRICULTURAL RESOURCES AGRICULTURAL CROPS AGRICULTURAL CROP RESIDUE AGRICULTURAL INDUSTRY WASTE SUNFLOWERS, SAFFLOWERS	MT CLRS MT DOA GRAIN ELEVATORS
FOOD PROCESSING WASTE	INDIVIDUAL BUSINESSES
ANIMAL MANURE	MT CLRS MT DOA
INDUSTRIAL WASTE (LIQUID AND SOLID)	INDIVIDUAL INDUSTRIES
MUNICIPAL WASTE (LIQUID AND SOLID)	MT DHES, SWM

MT CLRS -MONTANA CROP AND LIVESTOCK REPORTING SERVICE
MT DOA -MONTANA DEPT. OF AGRICULTURE
MT DHES, WQB-MONTANA DEPT. OF HEALTH AND ENVIRONMENTAL SCIENCES, WATER QUALITY BUREAU
MT DHES, SWM-MONTANA DEPT. OF HEALTH AND ENVIRONMENTAL SCIENCES, SOLID WASTE MANAGEMENT BUREAU
MT DSL -MONTANA DEPT. OF STATE LANDS
US BLM -U.S. BUREAU OF LAND MANAGEMENT
USFS -U.S. FOREST SERVICE

CONTACTS FOR BIOMASS RESOURCE AVAILABILITY

State Agencies

Lyle Pratt, State Statistician
Montana Crop and Livestock Reporting Service
P.O. Box 4369
Federal Building, Room 398
Helena, MT 59604 449-5303

Steve Kalgaard, Market Research Analyst
Montana Department of Agriculture
Scott Hart Building
303 Roberts
Helena, MT 59620 444-3144

Ken Krest
Montana Department of Health and Environmental Sciences
Water Quality Bureau
Cogswell Building
Helena, MT 59620 444-2406

Bill Potts
Montana Department of Health and Environmental Sciences
Solid Waste Management Bureau
Cogswell Building
Helena, MT 59620 444-2821

Paul Moore, Timber Marketing Specialist
Montana Department of State Lands
Division of Forestry
2705 Spurgin Road
Missoula, MT 59801 728-4300

Montana Department of State Lands--Field Operations

Division Headquarters
Capitol Station
1625 Eleventh Avenue
Helena, MT 59620 444-2074

Central Land Office
8001 North Montana
Helena, MT 59620 444-3633

Eastern Land Office
P.O. Box 1794
Miles City, MT 59301 232-2034

Northeastern Land Office
P.O. Box 1201
USDA Building
613 Northeast Main Street
Lewistown, MT 59457 538-5989

Northwestern Land Office
Box 490
2250 Highway 93, North
Kalispell, MT 59901 755-6575

Southwestern Land Office
1401 27th Avenue
Missoula, MT 59801 728-3924

Federal Agencies

U.S. Department of Interior, Bureau of Land Management*
Montana State Office
222 North 32nd Street
P.O. Box 30157
Billings, MT 59107 657-6561
*(Headquarters for three-state area: Montana, North Dakota, and South Dakota)

District Offices
Miles City District Office
P.O. Box 940
West of Miles City
Miles City, MT 59301 232-4331

Lewistown District Office
Airport Road
Lewistown, MT 59457 538-7461

Butte District Office
P.O. Box 3388
106 North Parkmont
Butte, MT 59702

U.S. Department of Agriculture, Forest Service Offices

Beaverhead National Forest
P.O. Box 1258
610 North Montana Street
Dillon, MT 59725 683-5900

Bitterroot National Forest
316 North Third Street
Hamilton, MT 59840 363-3131

Custer National Forest
P.O. Box 2556
2602 First Avenue North
Billings, MT 59103 657-6361

Deerlodge National Forest
P.O. Box 400
Federal Building
400 North Main Street
Butte, MT 59703 496-3400

Flathead National Forest
P.O. Box 147
1935 Third Avenue East
Kalispell, MT 59901 755-5401

Gallatin National Forest
P.O. Box 130
Federal Building
Bozeman, MT 59715 587-6702

Helena National Forest
Federal Building
301 South Park Street
Drawer 10014, Room 334
Helena, MT 59626 449-5201

Kootenai National Forest
Rural Route 3, Box 700
West Highway 2
Libby, MT 59923 693-6211

Lewis and Clark National Forest
P.O. Box 871
1601 Second Avenue North
Great Falls, MT 59403 727-0901

Lolo National Forest
Fort Missoula, Building 24
Missoula, MT 59801 329-3797

Other Helpful Organizations

Charles Kegan
Bureau of Business and Economic Research
University of Montana
Missoula, MT 59812 243-5113

Alan Green, Resource Analyst
Research Information
Intermountain Research Station
324 25th Street
Ogden, UT 84401 (801) 625-5434

APPENDIX A

BIOMASS ENERGY PROJECTS

The following is a list, by technology, of current biomass energy projects in Montana:

DENSIFICATION

Pellet Plants:

Winston Wansrath
Bitterroot Timber
P.O. Box 53
Darby, MT 59829

Loren Collins
Mountain Energy/Collins Enterprises
P.O. Box 3686
Bozeman, MT 59715

Allen "Bud" Zempel
Rocky Mountain Fuel and Feed
P.O. Box 55
Ravalli, MT 59863

ALCOHOL PRODUCTION

Alcohol Plants

AE Montana
Route 2, Box 125
Manhattan, MT 59741
(Plant located at Amsterdam, MT)

Alcotech
P.O. Box 154
Ringling, MT 59642

Charles Bronec
Star Route
Geraldine, MT 59446

Sage'N Cedar
Terry, MT 59349

Southwest Alcohol Producers
Conklin Plant
Dillon, MT 59725

ANAEROBIC DIGESTION

Municipalities Using Anaerobic Digestion to Produce Biogas

Billings
Bozeman
Helena
Kalispell
Livingston
Missoula

Farm-Scale Methane Digester

David Oien
Rural Route 3, Box 463
Conrad, MT 59425 278-3384

DIRECT COMBUSTION

Boilers and Dry Kiln

AE Montana
Route 2, Box 125
Manhattan, MT 59741

Alcotech
P.O. Box 154
Ringling, MT 59642

American Timber Company
P.O. Box 128
Olney, MT 59927

Brand "S" Lumber Co.
P.O. Box 1033
Livingston, MT 59047

Champion Building Products
Drawer 7
Bonner, MT 59823

Champion Building Products
P.O. Box 854
Helena, MT 59601

Champion Building Products
Missoula, MT 59801

Champion International Corporation
P.O. Box V-X
Libby, MT 59923

Stone Container Corporation
Drawer D
Frenchtown, MT 59834

Daw Forest Products Company
P.O. Box 369
Superior, MT 59872

Darby Lumber Inc.
P.O. Box 395
Darby, MT 59829

Eagle Stud Mill, Inc.
P.O. Box 29
Hall, MT 59837

Flathead Lumber
Route 1
Polson, MT 59860

Flathead Post & Pole
Star Route, P.O. Box 13
Dixon, MT 59831

Flodin Lumber Company
P.O. Box 309
Plains, MT 59859

Ksanka Lumber Company
P.O. Box 28
Fortine, MT 59918

Louisiana-Pacific Corporation
Kentucky Avenue
Deer Lodge, MT 59722

Louisiana-Pacific Corporation
P.O. Box 4007
Missoula, MT 59801

Missoula White Pine Sash
P.O. Box 7009
Missoula, MT 59807

Emmett Lisle, Operations Manager
Montana Light and Power*
P.O. Box VX
Libby, MT 59923 293-4141
*Wholly owned subsidiary of Champion International

Plum Creek Timber Company
P.O. Box 325
Belgrade, MT 59714

Plum Creek Timber Company
160 Fourth Avenue West
P.O. Box 160
Columbia Falls, MT 59912

Plum Creek Timber Company
75 Sunset Drive
Kalispell, MT 59901

Plum Creek Timber Company
P.O. Box 188
Pablo, MT 59855

Pyramid Mountain Lumber Company
P.O. Box 20
Seeley Lake, MT 59836

Roy Martin, Maintenance Supervisor
St. Ignatius Elementary School
P.O. Box 400
St. Ignatius, MT 59865 745-3811

F.H. Stolze Land & Lumber Company
P.O. Box 1429
Columbia Falls, MT 59912

F.H. Stolze Land & Lumber Company
P.O. Box 389
Dillon, MT 59725

Stolze-Conner Lumber Company
P.O. Box 415
Darby, MT 59829

Superior Building Company
P.O. Box D
Columbia Falls, MT 59912

WI Forest Products, Inc.
P.O. Box 368
Thompson Falls, MT 59773

Incinerators

Park County Refuse System
328 North M Street
Livingston, MT 59047 222-6232

COGENERATION

Stan Pavlick, Chief Engineer
Stone Container Corp.
Drawer D
Missoula, MT 59806 626-4451

Emmett Lisle, Operations Manager
Montana Light & Power*
P.O. Box VX
Libby, MT 59923 293-4141
Wholly owned subsidiary of Champion International

APPENDIX B

STATE AGENCIES

DEPARTMENT OF AGRICULTURE
Plant Industry Division
Agriculture and Livestock Building
Sixth and Roberts
Helena, MT 59620
Roy Bjornson, Administrator — 444-3730

DEPARTMENT OF COMMERCE
Building Codes Bureau
1218 East Sixth Avenue
Helena, MT 59620
James Brown, Bureau Chief — 444-3933

Business Licensing Center
Business Assistance Division
1424 Ninth Avenue
Helena, MT 59620 — 1-800-221-8015 or 444-3923

DEPARTMENT OF FISH, WILDLIFE AND PARKS
Fisheries Division
Fish, Wildlife & Parks Building
1420 East Sixth Avenue
Helena, MT 59620
Arthur Whitney, Administrator — 444-2449

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Cogswell Building
Helena, MT 59620

AIR QUALITY BUREAU
Harold Robbins, Chief — 444-3454

OCCUPATIONAL HEALTH BUREAU
Larry Lloyd, Chief — 444-3671

SOLID AND HAZARDOUS WASTE BUREAU
Duane Robertson, Chief — 444-2821

WATER QUALITY BUREAU
Steven L. Pilcher — 444-2406

DEPARTMENT OF HIGHWAYS
Highway Building
2701 Prospect Avenue
Helena, MT 59601

GROSS VEHICLE WEIGHT DIVISION
Collections and Licensing Bureau
Wilber Frickel, Chief 444-6130

ENGINEERING DIVISION
Right of Way Bureau
Jack Ricker, Chief 444-6057

DISTRICT OFFICES:

Billings District
424 Morey
P.O. Box 20437
Billings, MT 59104 252-4138

Butte District
Wynne & Lowelll
P.O. Box 3068
Butte, MT 59701 494-3224

Glendive District
503 North River Avenue
P.O. Box 890
Glendive, MT 59330 365-5296

Great Falls District
104 18th Avenue, Northeast
P.O. Box 1359
Great Falls, MT 59403 453-0422

Missoula District
2100 West Broadway
P.O. Box 7039
Missoula, MT 59807 549-6491

DEPARTMENT OF JUSTICE
Fire Marshall Bureau
Scott Hart Building, Room 371
303 Roberts
Helena, MT 59620
Robert Kelly, Chief 444-2050

DEPARTMENT OF LABOR AND INDUSTRY
Workers' Compensation Division
Safety Bureau
5 South Last Chance Gulch
Helena, MT 59620
Ed Gatzemeier, Chief 444-6401

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1520 East Sixth Avenue
Helena, MT 59620

CONSERVATION DISTRICTS DIVISION
Ray Beck, Administrator 444-6667

ENERGY DIVISION
Conservation and Renewable Energy Bureau
Georgia Brensdal, Engineering Section Supervisor 444-6697
Howard Haines, Bioenergy Program Engineer 444-6697

Facility Siting Bureau
Wayne Wetzel, Assistant Bureau Chief 444-6791

OIL AND GAS CONSERVATION DIVISION
2535 St. Johns Avenue
Billings, MT 59102
Charles Maio, Administrator and Geologist 656-0040

WATER RESOURCES DIVISION
Engineering Bureau
Richard Bondy, Chief 444-6646

Water Rights Bureau
Larry Holman, Chief 444-6610

Water Rights Bureau Area Field Offices:
See Special Areas, pages 81-82

DEPARTMENT OF PUBLIC SERVICE REGULATION
Utility Division
2701 Prospect Avenue, Building D
Helena, MT 59620
Dan Elliott, Administrator 444-6180

DEPARTMENT OF REVENUE
Motor Fuels Tax Division
Airport Road
Helena, MT 59620
Norris Nichols, Administrator 444-3474

DEPARTMENT OF STATE LANDS
Land Administration Division
1625 Eleventh Avenue
Helena, MT 59620
Kelly Blake, Administrator 444-2074

Forestry Division
2705 Spurgin Road
Missoula, MT 59801
Gary Brown, Administrator 728-4300

Department of State Lands Field Operations:
See Biomass Resources, pages 87-88

ENVIRONMENTAL QUALITY COUNCIL
Room 432, State Capitol
Helena, MT 59620
Deborah Schmidt, Executive Director 444-3742

APPENDIX C

FEDERAL AGENCIES

ARMY CORPS OF ENGINEERS
Omaha District
P.O. Box 5
Omaha, NE 68101-0005 402-221-4133

BUREAU OF ALCOHOL, TOBACCO, AND FIREARMS
Regional Director (Compliance)
221 Main Street, 11th Floor
San Francisco, CA 94105 415-974-9625

DEPARTMENT OF AGRICULTURE
Forest Service
Intermountain Research Station
324 25th Street
Ogden, UT 84401 801-625-5434

Forest Service
National Forest Offices in Montana:
See Biomass Resources, pages 88-89

DEPARTMENT OF INTERIOR
Bureau of Indian Affairs
316 North 26th Street
Billings, MT 59101 657-6315

Bureau of Land Management Offices
See Biomass Resources, page 88

ENVIRONMENTAL PROTECTION AGENCY
301 South Park Avenue
Helena, MT 59626 449-5432

FEDERAL ENERGY REGULATORY COMMISSION
333 Market Street
San Francisco, CA 94105 415-974-7150

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
19 North 25th Street
Billings, MT 59101 1-800-332-7087

APPENDIX D

ORGANIZATIONS

BUREAU OF BUSINESS AND ECONOMIC RESEARCH
University of Montana
Missoula, MT 59812 243-5113

ELECTRIC COOPERATIVES:
See Special Areas, pages 71-74

GLOSSARY*

Acid hydrolysis: A chemical process in which acid is used to convert starch to sugar.

Alcohol: A general class of hydrocarbons that contain a hydroxyl group (OH). In this guidebook, the term "alcohol" is used interchangeably with the term "ethanol", even though there are actually many types of alcohol. (See Butanol, Ethanol, and Methanol.)

Ambient air quality: The condition of the air in the surrounding environment.

Anaerobic: Pertaining to the absence of free oxygen.

Anaerobic digestion: A biochemical degradation process that converts complex organic materials to methane and other by-products in the absence of free oxygen.

Attainment area: A geographic region where the concentration of a specific air pollutant does not exceed federal standards.

Avoided costs: The incremental costs to an electric utility of electric energy or capacity or both which, but for the purchase from the qualifying facility or facilities, such utility would generate itself or purchase from another source.

Backup electricity (backup services): Power and/or services that are only occasionally needed, e.g., when on-site generation equipment fails.

Backup rate: A utility rate applied to backup electricity.

Baseload capacity: A reference to electricity production: the power output that can be continuously produced. Usually computed by considering equipment that the operator/utility intends to run at least 70% of the time.

Baseload demand: The minimum demand experienced by an electric utility, usually 30-40% of the utility's peak demand. At any time the utility's customers may need power equal to or greater than the baseload demand.

Best Available Control Technology (BACT): BACT means an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation and emitted from or which results from any major emitting facility. The permitting authority, on a case-by-case, taking into account energy, environmental and economic impacts, and other costs, determines what is achievable for each facility through application of production processes and available methods, systems, and techniques. This includes fuel cleaning or treatment or innovative fuel combustion techniques for control of each pollutant.

*Sources include:
Montana Air Quality Data & Information Summary for 1984 (1985)
Montana Renewable Energy Handbook (1980)
Pacific Northwest and Bioenergy Program Glossary (1985)

Biochemical conversion process: The use of living organisms or their products to convert organic material into fuels.

Bioenergy: The conversion of the complex carbohydrates in organic matter into energy, either by using it directly as a fuel or by processing it into liquids and gases that are more efficient.

Biogas: A combustible gas derived from decomposing biological waste. Biogas normally consists of 50% to 60% methane.

Biological oxygen demand (BOD): The amount of dissolved oxygen required to meet the metabolic needs of anaerobic microorganisms in water which is rich in organic matter, such as sewage.

Biomass: Any organic matter which is available on a renewable basis including forest residues, agricultural crops and wastes, wood and wood wastes, animal wastes, livestock operation residue, aquatic plants, and municipal wastes.

Biomass energy: Biomass fuel, energy, or steam derived from the direct combustion of biomass for the generation of electricity, mechanical power, or industrial process heat.

Biomass fuel: Any liquid, solid, or gaseous fuel produced by conversion from biomass.

Boiler: Any device used to burn biomass material land wastes to heat water for generating steam.

British thermal unit (Btu): A unit of heat energy equal to the heat needed to raise the temperature of one pound of water one degree Farenheit.

Butanol (butyl alcohol): A flammable alcohol with the chemical formula $CH_3(CH_2)_3OH$. It is formed during anaerobic sugar fermentation using bacteria.

Capital cost: The total investment needed to complete a project and bring it to an operable status that is commercial.

Cellulose: The main carbohydrate in living plants forming the skeletal structure of the plant cell wall. The carbohydrate molecule is composed of long chains of glucose molecules bound together. Cellulose molecules are much larger and more structurally complex than starch molecules, which makes the breakdown of cellulose to glucose more difficult.

Chemical decomposition: The breakdown by chemical attack of organic matter into simpler molecules or atoms.

Chemical oxygen demand (COD): The amount of dissolved oxygen required to combine with chemicals in the water, usually for industrial wastewater.

Class I Area: Any area which is designated for the most stringent degree of protection from future degradation of air quality.

Class II Area: Any area cleaner than federal air quality standards which is designated for a moderate degree of protection from future air quality degradation. Moderate increases in new pollution may be permitted in a Class II area.

Cogeneration: The technology of producing electric energy and forms of useful energy (thermal or mechanical) for industrial, commercial, heating, or cooling purposes, through the sequential use of an energy source.

Combustion: The transformation of wood into heat, chemicals, and gases through chemical combination of hydrogen and carbon in the wood fuel with oxygen in the air.

Densification: A process that compresses biomass (usually wood waste) into pellets, briquets, cubes, or densified logs by subjecting it to high pressure.

Distillation: The process by which the components of a mixture (i.e. ethanol-water) are separated by boiling and re-condensing the resultant vapors.

Distillers Dried Grains (DDGS): The dried distillers grains byproduct of the grain fermentation process which may be used as a high-protein animal feed.

Emissions: Substances discharged into the environment as waste material, such as discharge into the air from smokestacks, or discharge into the water from waste streams.

Enzymatic Hydrolysis: A process by which enzymes (biological catalysts) are used to break down starch into sugar.

Ethanol (ethyl alcohol): A flammable alcohol compound with the chemical formula CH_3CH_2OH formed during sugar fermentation by yeast.

Fermentation: The biological conversion by yeast of sugar to carbon dioxide and alcohol.

Furnace: Any device used to burn biomass materials to produce heat or process heat.

Gasification: A chemical or heat process used to convert a feedstock to a gaseous form.

Gasohol: Registered trade name for a blend of 90% unleaded gasoline with 10% fermentation alcohol.

Hogged fuel: Wood waste such as sawdust, planer shavings, and wood chunks normally used for fuel purposes.

Incinerator: Any device used to burn solid and combustible liquid residues or wastes in order to produce heat.

Landfill gas: The gas that is generated from the decomposition of organic material at solid waste disposal sites. The gas generated is approximately 50% methane.

Liquefaction: The process of converting biomass waste materials from a solid to a liquid form. The conversion process is a chemical change in the biomass that takes place at elevated temperatures and pressures.

Liquid hydrocarbon: One of a very large group of chemical compounds composed only of carbon and hydrogen. The largest source of hydrocarbons is from petroleum crude oil.

Methane: An odorless, colorless, flammable gas that is the primary constituent of natural gas.

Methanol (methyl alcohol): An alcohol with the chemical formula CH_3OH. Methanol is usually produced by chemical conversion at high temperatures and pressures.

Mill residue: Wood and bark residues produced in processing lumber.

Nonattainment Area: A geographic area in which the quality of the air is worse than federal air pollution standards. PSD requirements do not apply in nonattainment areas.

Oilseed extraction: The separation of vegetable oil from seeds (safflower, sunflower) by pressing out the oil and dissolving the remainder of the oil with solvents.

Opacity: The relative capacity of smoke or particles emitted into the air to obstruct the transmission of light.

Organic: Of, relating to, or derived from living organisms; of, relating to, or containing carbon compounds.

Organic Compounds: Chemical compounds based on carbon chains or rings and also containing hydrogen with or without oxygen, nitrogen, and other elements.

Particulates: Fine solid particles which remain individually dispersed in stack emissions.

pH: A scale that measures the acidity or alkalinity of a solution. An acidic solution has a pH of 0-7; a neutral solution has a pH of 7; and an alkaline solution has a pH of 7-14.

Prevention of Significant Deterioration (PSD): A planning and management process for air quality.

Producer Gas: Fuel gas high in carbon monoxide (CO) and hydrogen (H2), produced by burning a solid fuel (biomass) with a deficiency of air or by passing a mixture of air and steam through a bed of solid fuel (biomass).

Pyrolysis: The breaking apart of complex molecules into simpler units by the use of heat. For this handbook, the process involves chemical decomposition of biomass to producer gas, fuel oil, and charcoal.

Renewable energy resource: Any energy resource that can be replaced after use through natural means such as solar energy, wind energy, hydropower, and energy from growing plants.

Solvent extraction: A method of separation in which a solid or solution is contacted with a liquid solvent (the two being essentially mutually insoluble) to transfer one or more conponents into the solvent. This method is used to refine vegetable oils.

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